AMERICAN ARTISAN

WARM AIR HEATING - SHEET METAL CONTRACTING
RESIDENTIAL AIR CONDITIONING

JULY, 1944

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Attic Ventilators by AIR CONTROL

Government emphasis on fuel saving has created a tremendous demand for home insulation. If you are selling this market, you will find AIR CONTROL attic ventilators indispensable in providing proper attic ventilation.

Attic ventilation licks two major problems—in the winter they provide necessary ventilation to carry off moisture that destroys the effectiveness of the insulation—in summer they carry off the excessive attic heat and help to keep the rooms below at a cooler temperature.

Both styles are heavy all steel construction with baked moisture resisting primer. Rolled edge louvers give a massive appearance and ample free area while the sharp louver angle is a positive assurance against the entrance of rain. The wire screen on the back keeps out insects and provision is made for closing the back of the louver with glass or metal. Easy to install—Low in price—Air Control Attic Ventilators are the answer to attic ventilation problems. *Write today for complete information*

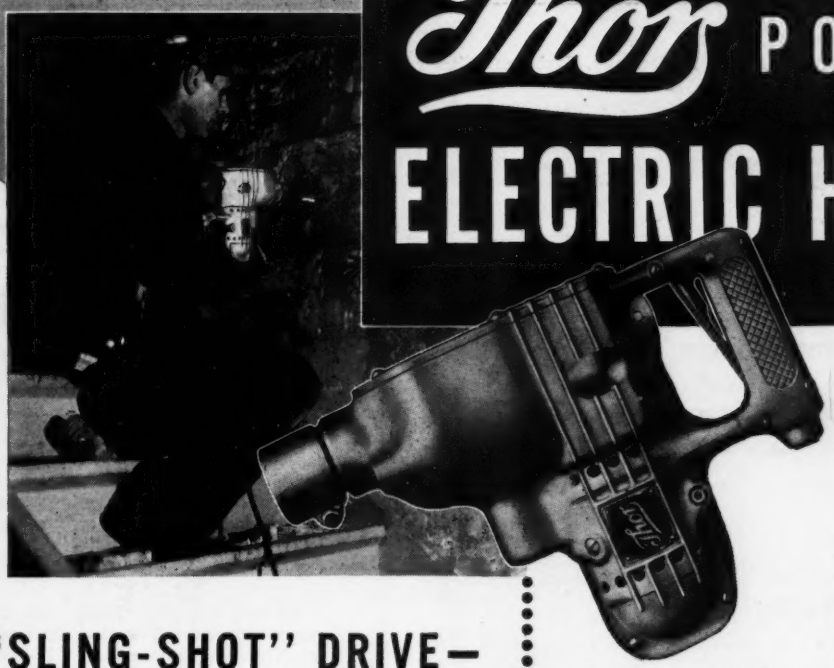
Air Control Products, Inc.

COOPERSVILLE • MICHIGAN

STRONGER BLOWS = MORE WORK PER HOUR!

WITH THE

Thor PORTABLE ELECTRIC HAMMER



POWERFUL HAMMERING SPEEDS INSTALLATIONS ON EVERY JOB

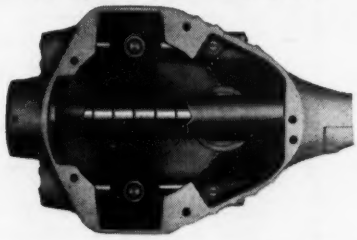
The Thor Portable Electric Hammer delivers 1,600 blows a minute—every one *a more powerful blow* than any hammer of comparable size and capacity!

For any installation work in stone, wood or metal there are hundreds of jobs of star-drilling, channeling, demolition, cleaning out mortar, web cutting, removing form marks, cutting, gouging, shaping, chipping, scaling, bushing and many more on which this powerful Thor Hammer will save you hours and dollars.

Weighing only 14 pounds, and just 13½ inches in length, it can be operated easily in any position . . . can go with the operator into the tightest, hardest-to-get-at corners.

Combined with this important handling ease are *power* features of a specially designed Thor motor that transmits power through heavy-duty, helical cut gears, and full ball bearing construction fully sealed to keep out dust and dirt that provide fast, sure hammering to get installations started.

"SLING-SHOT" DRIVE— Secret of Thor Hammer's Powerful Blow



Packs More Power into Every Blow — The Thor Hammer's radically different "Sling-Shot Drive" is a shock-proof rubber connection that drives the piston in powerful hammer action. It whips the piston back and forth 1,600 times per minute, acting as both power accumulator and shock absorber. The blow of the piston is not felt by the operator nor is it transmitted to the gears or motor.

Thor *Portable Pneumatic and Electric Tools*

INDEPENDENT PNEUMATIC TOOL COMPANY

600 W. JACKSON BOULEVARD, CHICAGO 6, ILL.

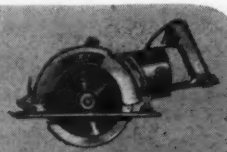
Branches in Principal Cities

To follow through, there are THOR Tools for every application. Write today for Catalog No. 38.

THOR ¼" PLASTIC ELECTRIC DRILL

THOR ½" ELECTRIC DRILL

THOR ELECTRIC SCREWDRIVER



THOR ELECTRIC SAW

AMERICAN ARTISAN

WITH WHICH ARE MERGED

FURNACES AND SHEET METALS

AND

Warm-Air Heating

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

J. D. Wilder, Editor — A. A. Kennedy, Assistant Editor

Vol. 113, No. 7 — July, 1944 — Founded 1880

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In This Issue

PROBABLY every business man—and wage earners, too—are speculating on the chances for a reduction in taxes after the war. On page 44 Arnold Kruckman summarizes the numerous ideas now being considered in Washington and gives a rough idea of how possible each of these plans is.

* * *

And along this same line Arthur Roberts, on page 42, lists the many "costs" which now must be segregated and accounted for from day to day. Not every business man will have all the costs, but all will have most of them. Mr. Roberts will continue this series and will set up a cost recording system which meets the requirements of today's tax reporting.

* * *

On page 48 we bring you bad news—Maximum Price Regulation 251 was never really dead. It's been mighty quiet, but a revision is under discussion in Washington. We hold, as do other segments of the construction industry, that MPR-251 is impracticable, unnecessary, and certainly burdensome. Other factions in the construction industry are protesting MPR-251 vehemently — perhaps we should add our protests.

* * *

After many months—we now give you an-easy-to-use tabulation showing how you can sell blowers. This valuable table was prepared by Lou Reining, Chicago, who has done more, probably, to study all the angles on blower sales than any one in the industry.

* * *

Beginning on page 58 we explain what the Fuel Conservation Program is—and what we can do to help. Actually, unless we do help, the program can't succeed—as we said in June we are the key to success in fuel saving. And we follow with three more tabulations showing just how AA readers service Controls, Oil Burners, Stokers.

Member of Audit Bureau of Circulations — Member Associated Business Papers, Inc.

Published monthly by Keeney Publishing Company, 6 N. Michigan Ave., Chicago (2), Ill., U. S. A. Copyright 1944 by Keeney Publishing Company. Publisher—Frank P. Keeney; Manager—Chas. E. Price. Advertising staff: Wallace J. Osborn, New York City, Telephone—Murray Hill 9-8293; J. D. Thomas, Chicago, Telephone—State 6916; Robert A. Jack, Cleveland, Telephone—Yellowstone 1540; J. H. Tinkham, Los Angeles, Telephone—Richmond 6191. (On leave of absence—R. Payne Wettstein, U.S.N.R.)

Yearly Subscription Price—U. S. and possessions, Canada, Mexico, South America, Central America, $2.00; Foreign, $4.00. Single copies, U. S. and possessions, $.25. Back numbers, $.50. January, 1944, Directory issue, $1.00 per copy. Entered as second-class matter, July 29, 1932, at the post office at Chicago, Illinois, under the act of March 3, 1879.

SELL HEATING *Economy* and SERVICE NOW

Winter-Worn Heating Systems NEED Reconditioning for the Coming Winter

There will be no "let-up" in the demand for fuel saving during the coming winter. And there will be even LESS fuel than was available last year.

This presents an attractive opportunity for Heating Engineers and Contractors to sell *early* reconditioning and repair of winter worn heating plants.

Next to your own skill and knowledge of heating problems, the best aid in this important service to your customers is the quality Asbestos Products offered by Sall Mountain Company.

Sal-Mo Asbestos Products are available for all types of fireproofing, and insulating needs. They include Asbestos and Aircell Papers, Millboards, #77 Ductboard, Supply Duct, Pipe Coverings, Furnace and Boiler Cements, Tank Jackets and many others.

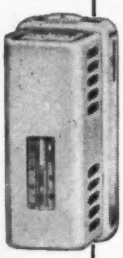
SALL MOUNTAIN COMPANY • AND. 2414-5
176 WEST ADAMS STREET
CHICAGO 3, ILLINOIS

TESTED SWITCH SENSITIVITY!

All White-Rodgers switch units are individually adjusted to uniform tolerances within extremely close limits.

8 EXCLUSIVE FEATURES OF WHITE-RODGERS HYDRAULIC-ACTION TEMPERATURE CONTROLS

1. May be mounted at any angle or position, above, below or on level with control point.
2. Hydraulic-Action Principle incorporating solid-liquid filled bulb and capillary provides expansion force comparable to that of a metal bar.
3. Diaphragm motion uniform per degree of temperature change.
4. Power of solid-liquid charge permits unusually sturdy switch construction resulting in positive contact closure.
5. Heavier, longer-wearing parts are possible because of unlimited power.
6. Dials are evenly and accurately calibrated over their entire range because of straight-line expansion.
7. Controls with remote bulb and capillary are not sensitive to change in room temperature. Accuracy of control is not affected by temperature changes in surrounding area.
8. Not affected by atmospheric pressure. Works accurately at sea level or in the stratosphere without compensation or adjustment.



Another of the many White-Rodgers tests and standards which assure the accurate performance of Hydraulic Action Controls wherever they may be applied.

This, and other testing equipment, has been operating since the first White-Rodgers Control was built — operating to assure accurate temperature control to you — and to safeguard White-Rodgers reputation in the heating and refrigeration fields.

HYDRAULIC ACTION CONTROL

Fuel-Saving Starts With CONTROL

WHITE-RODGERS ELECTRIC CO.

1215G Cass Ave. St. Louis, Mo.

Controls for Refrigeration • Heating • Air-Conditioning

VIKING'S POST WAR PLANNING FILE FOR DEALERS

HERE'S WHY FORCED AIR HEATING SAVES THE HOME OWNER MONEY

Keep this story for reference, use it to explain Forced Air Heating to prospects

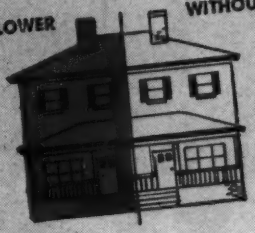
FIELD STUDY No. 1 Cleveland, Ohio

Only last month a Viking Blower user told us how he was able to improve his oil-fired heating system. Even with fuel restricted the way it is, he had 100 gallons of oil left at the end of the season. When he heated with gravity, his 1941-42 bill was $170.00. In 1942-43 he changed over to forced air. Guess what his fuel bill came to. Only $98.00! And 100 gallons of fuel left to boot.

FIELD STUDY No. 2 Cleveland, Ohio

WITH BLOWER

WITHOUT BLOWER



In a side by side duplex the tenants on one side had a forced air system, heated all six rooms comfortably for a ton less coal all season than their neighbors.

The other tenants had a gravity system. They used a ton more coal that winter, only four of the six rooms were comfortable. The others were practically unheated.

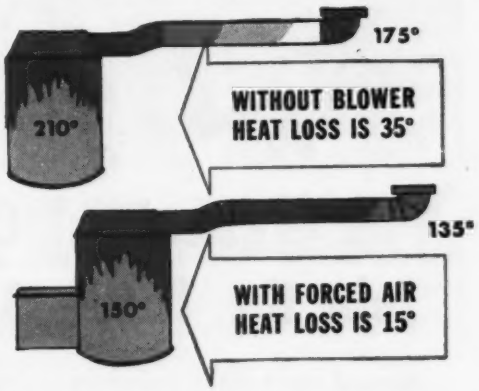
FIELD STUDY No. 3 Wichita, Kansas

Three houses formerly heated by gravity system, changed over to forced air. Their furnaces were gas-fired. Although each homeowner found a different saving in his gas bill, each one found at the end of the season that his average savings was 21%. That means if an average bill formerly had been $100.00 a season, it was now only $79.00.

1 Reduces Piping Losses

Temperature of air leaving furnace in a gravity system is 200°. By the time this air has traveled through ducts to register in room, temperature is 175°. It has lost 35° of heat in transit

With forced air, temperature of air leaving furnace is only 150°. When it reaches the room, temperature is 135°. Forced air heat loss is 15°; gravity heat loss is 35°.



25% Fuel Saving with Forced Air

With forced air, THREE SHOVELS FULL OF COAL GIVE YOU THE SAME HEAT AS FOUR SHOVELS FULL with a gravity system. You can HEAT EIGHT ROOMS COMFORTABLY with forced air USING NO MORE COAL than to heat six rooms with a gravity system.

2 Prevents Chimney Waste

Imagine a steaming cup of coffee. You let it stand till it cools (gravity circulation). Or you blow on it (forced air) to remove heat faster. Just so the blower removes heat from furnace casing and radiator by blowing it into the house faster. Result: less heat escapes up the chimney.

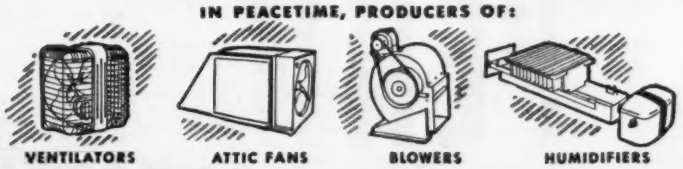
Do you want to know more?

Do you want to learn more of the selling points of winter air conditioning to use on prospects? Do you want to learn how to make a good profit on blower packages? We have "The Conditioner", an illustrated house organ that tells you what you need to know. And we have the "Viking Planning and Selling File", chock full of useful information. They're both FREE. Just write for them.

Any furnace can be adapted to Forced Air Heating with a Viking Blower

Viking

IN PEACETIME, PRODUCERS OF:



VENTILATORS ATTIC FANS BLOWERS HUMIDIFIERS

AIR CONDITIONING CORPORATION • 5600 Walworth Avenue • Cleveland 2, Ohio

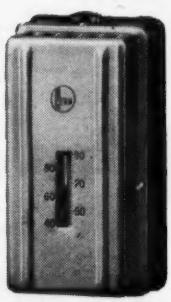
Dealers! Contractors!
Join the Battle Against Fuel Waste

Men of the heating industry—it's up to you! Fuel *must* be, *will* be conserved during this coming heating season. But our country needs your help and needs your leadership. You, and only you, have the knowledge and skill to put the heating plants of the nation in condition to burn fuel efficiently. *Remember that* "Fuel-Saving Starts with Control."

- ★ **Install Draftender controls in hand-fired systems—*to save fuel.***
- ★ **Install limit controls on thermostatically-controlled systems where limit controls are lacking—*to save fuel.***

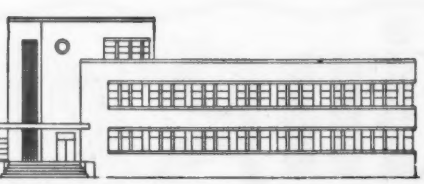
  Replace faulty or obsolete controls—*to save fuel.*
- ★ **See that controls are properly adjusted—*to save fuel.***

Do not wait till the heating season is on! Start now and avoid the late summer rush! Order your needed PENN controls from your local wholesaler. *Penn Electric Switch Co., Goshen, Indiana.* Export Division, 13 E. 40th St., New York 16, U. S. A. In Canada: Powerlite Devices, Ltd., Toronto, Ont.



Penn Temtrol . . . heat anticipating thermostat . . . holds temperatures closely at desired setting and prevents waste fuel.

PENN

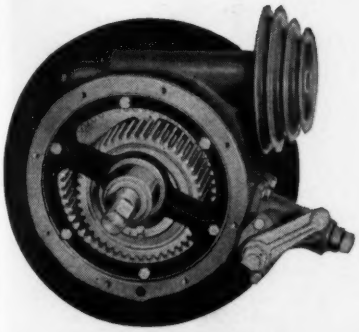


AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

THIS BOOKLET WILL SHOW YOU WHO HAS

THE BEST STOKER DEAL



ANNOUNCING THE WINKLER TWO-FOR-ONE ADVERTISING BONUS PLAN— A SOLID SMASH OF SALES-MAKING PUBLICITY FOR WINKLER DISTRIBUTORS

Exciting reading for profit-minded men! Conclusive evidence that the Winkler Stoker Organization is the right spot for stoker distributors who want to tie-in with a leader.

Winkler offers a personalized program of advertising . . . *built around your own business* . . . stirring up interest in stokers . . . creating desire . . . spurring prospects to action! The Winkler Two-for-One Bonus Plan *gives you twice as much advertising as you could normally have* . . . makes sales today — and lays the groundwork for a clean-up in Winkler Domestic Stokers after the war.

This is an organized sales promotion program that gives you dominating sales power in your territory. Send the coupon for full information.

EXTRA POWER SELLING BACKED BY THE *EXTRA POWER STOKER*

In only one stoker can you get a *fully automatic transmission* . . . and that's the Winkler! It's the feature that gives the Winkler Stoker the edge in any company.

Ever see a Winkler demonstration? See it smash rocks in the crusher block . . . see it chew a 2 x 4 into splinters . . . see the transmission disengage and reset itself when the feed screw is blocked? All without damage to motor or gears, or need for replacing a shear pin. That's what we mean by EXTRA POWER!

This demonstration shows you why it's easy to sell the Winkler Stoker. It's the stoker that gives service without needing it!

WINKLER

fully automatic STOKERS

U. S. MACHINE CORPORATION • LEBANON, INDIANA

U. S. Machine Corporation
Lebanon, Indiana

Rush me full information on the Winkler 2-for-1 Advertising Bonus Plan and how to obtain a Winkler Franchise.

Name.....

Address.....

City..... State.....

STEEL... AND ITS FUTURE

You and we of the sheet metal industry have good reason to look forward to post-war days. Not only will steel be more plentiful then than ever before but there will be a multitude of new uses for it and new products being made. Also, as the nation's steel makers put their efforts to peace-time work, the invaluable experience and research information they are now accumulating will bring forth newer steels, heretofore unthought of, with remarkable new qualities.

Even the scarcity of steel which we are now experiencing will work for us in peacetimes because our markets are growing bigger and bigger day by day as replacement needs pile up. These include not only maintenance and repairs but all of the new building work now held up because of war-time restrictions.

Wishful thinking? Not at all—and we should all prepare for the future by making plans for it today.

THE J. M. & L. A.
OSBORN Co
CLEVELAND, OHIO
BUFFALO • CINCINNATI • DETROIT
Manufacturers—Distributors of Metals and Metal Products

PRIME METAL SHEETS
EAVES TROUGHS
CONDUCTOR PIPE, ETC.
ROOFINGS, NAILS AND PAINT
FURNACES AND ACCESSORIES
SHEET METAL TOOL AND MACHINERY

A DEPENDABLE SOURCE OF SUPPLY FOR 85 YEARS

HOW TO MAKE UP A WOMANS MIND...

SHE'LL have a score of lines to choose from, post-war. And count on her to pick the best . . . . a line that combines beauty, quality, economy, dependability, long life, modest initial cost. That will be the CONCO post-war line. The CONCO line is set to *go*. When materials are released, production will be fast. Watch CONCO — it's a name with a future — for you!

CONCO

Division of H. D. Conkey & Company, Mendota, Ill.

A SIZE AND TYPE FOR EVERY HEATING REQUIREMENT

I AM *Efficient!* AND *Rugged!*

I AM *Modern!* AND *Smooth!*

I AM *Safe!* AND *Compact!*

I'm a Winner!

AT last they've cut me open so you can see I'm not just a pretty front. I'd feel pretty bad if all I had was "consumer appeal"—with only a smooth and compact shape to put me over.

The story has gone the rounds that I've got the best digestive system there is. I can live on coal, oil or gas, and, believe me, with the heat I generate from my food every inch of me gets *hot*.

Yet, I haven't the customary weak spots some of my relatives have. Look how that skin is protected from hot coals, how my lining reflects terrific radiant heat back into cracking the coal carbons for better combustion instead of burning my skin.

And look at the flue travel! The heat is really all siphoned off before it gets to the chimney. With my build they aren't flattering when they say I'm better than 80% efficient at my rated capacity. Some of the boys knew at a glance what I had and they're cashing in. Why don't you?

•

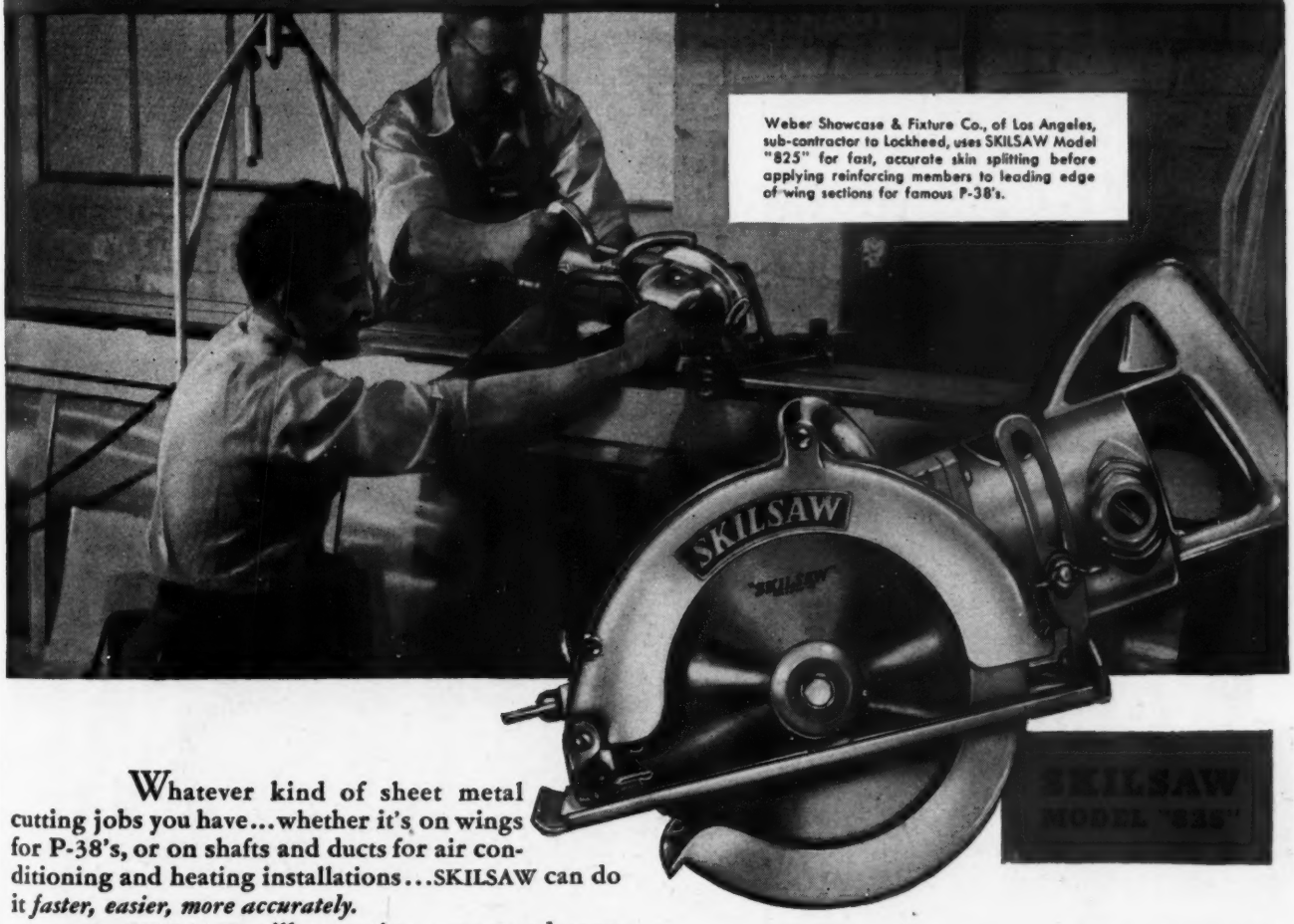
MADE BY ONE OF AMERICA'S MOST PROGRESSIVE FURNACE MANUFACTURERS

•

Syncromatic Corporation

3373 NO. HOLTON STREET MILWAUKEE 12, WISCONSIN

MODERN STEEL FURNACES



Weber Showcase & Fixture Co., of Los Angeles, sub-contractor to Lockheed, uses SKILSAW Model "825" for fast, accurate skin splitting before applying reinforcing members to leading edge of wing sections for famous P-38's.

Whatever kind of sheet metal cutting jobs you have...whether it's on wings for P-38's, or on shafts and ducts for air conditioning and heating installations...SKILSAW can do it *faster, easier, more accurately.*

SKILSAW will save *time, money* and *manpower* for you on all your construction and repair jobs, just as it steps up production at Weber Showcase & Fixture Co., wing builders for P-38's.

Industry everywhere has found that SKILSAW is a most efficient cutting tool, with or without a jig. SKILSAW is powerful, compact, light in weight, easy to use. It goes right to the work, saves steps, saves material handling. A quick change of blades prepares SKILSAW for dozens of cutting jobs in metals up to 16 gauge, or for fast sawing of wood, plastics or compositions.

PLANNING FOR AFTER-THE-WAR?
Let Skilsaw Field Engineers help you now to plan "tooling-up" for peacetime production with Skilsaw's new post-war tools.

SKILSAW does so many cutting jobs *better* that you can't afford to be without it, for both production and maintenance. Your distributor will gladly demonstrate SKILSAW on your own work. Call him today!

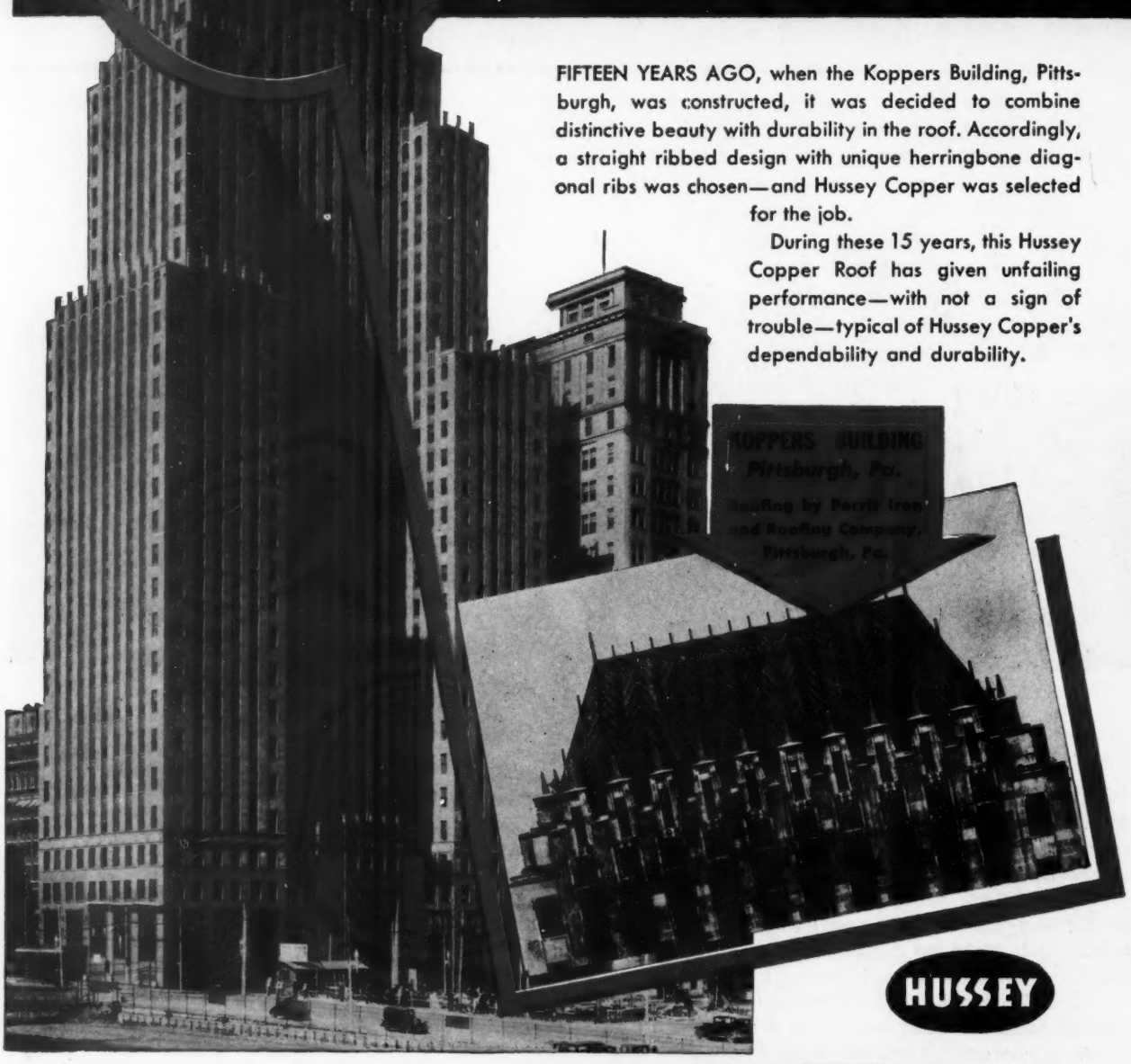
SKILSAW, INC.
5033-43 Elston Ave., Chicago 30, Ill.
Sales and Service Branches in All Principal Cities

SKILSAW PORTABLE ELECTRIC TOOLS
MAKE AMERICA'S HANDS MORE PRODUCTIVE

That's the Record of

HUSSEY COPPER

on the unique roof of PITTSBURGH'S FAMOUS KOPPERS BUILDING



FIFTEEN YEARS AGO, when the Koppers Building, Pittsburgh, was constructed, it was decided to combine distinctive beauty with durability in the roof. Accordingly, a straight ribbed design with unique herringbone diagonal ribs was chosen—and Hussey Copper was selected for the job.

During these 15 years, this Hussey Copper Roof has given unfailing performance—with not a sign of trouble—typical of Hussey Copper's dependability and durability.

HUSSEY

HUSSEY COPPER COMBINES ... WITH DISTINCTIVE BEAUTY ...

C. G. HUSSEY & COMPANY

(Division of Copper Range Co.)

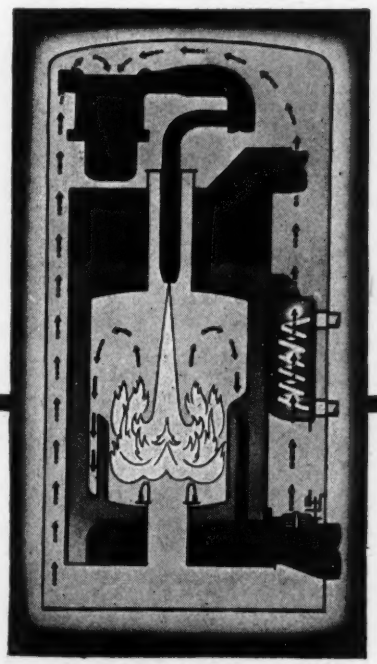
ROLLING MILLS AND GENERAL OFFICES: PITTSBURGH, PA.

Warehouses in Principal Cities

What G-E's wartime research is going to mean to dealers in the Postwar Heating Market

WHEN the automatic heating equipment of postwar goes on sale, General Electric Heating Distributors are likely to be among the busiest. For while little can be told, now, of G-E wartime research, it can well prove to be an outstanding sales advantage.

Many of the major improvements in automatic oil-fired heating were pioneered by General Electric research. Indeed, these developments of yesteryear have had a powerful influence on home owners in stimulating demand for G-E heating equipment.



Tomorrow, the results of General Electric's *current* research will be reflected in advanced automatic heating units —quiet, compact and efficient, easy to install—making the G-E franchise an even more powerful sales-aid for alert distributors. Interested? Write: *General Electric Company, Heating Division, Section 4537, Bloomfield, New Jersey.*

☆ BUY WAR BONDS ☆

THE G-E HEAT TRAP—An original research development that helped to make possible the amazing efficiency of the prewar G-E Oil Furnace. By means of this fuel-saving design feature, a maximum of heat is extracted from the fuel and heat losses through the chimney and flues are reduced to a minimum. Out of *today's* research will come *new advantages* for G-E owners and *new opportunities* for G-E dealers.

Automatic Heating by

GENERAL ELECTRIC

"CONTROLLED WEATHER"

Hear the General Electric Radio Programs: The "G-E ALL-GIRL ORCHESTRA," Sundays, 10 P. M., EWT, NBC..."THE WORLD TODAY" News, Every Weekday, 6:45 P. M., EWT, CBS

YES! LUXAIRE

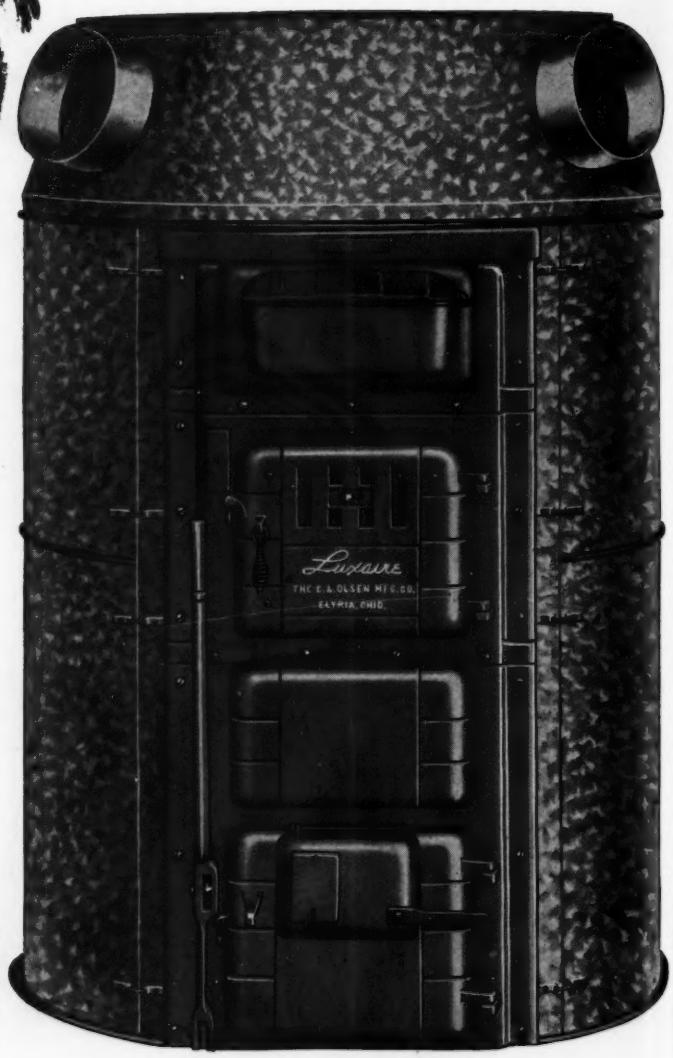
MEANS FINE HEATING EQUIPMENT!

TODAY, more than ever before, it is performance that counts with a public that has lived through the greatest performance era the world has ever known.

LUXAIRE products have always been outstanding in performance. From the very beginning, the building of excellent heating equipment has been our primary objective. Since before the war the name LUXAIRE has been synonymous with fine heating equipment.

Today, the Luxaire plant is in the midst of a vast expansion program. After the war is won, production of Luxaire products will be many times increased. Streamlined manufacturing facilities... new, time-saving machinery, plus manufacturing skill gained in war production, will result in superior furnaces and air conditioning units.

You can depend on LUXAIRE'S superior products to meet the exacting demands of tomorrow's market.



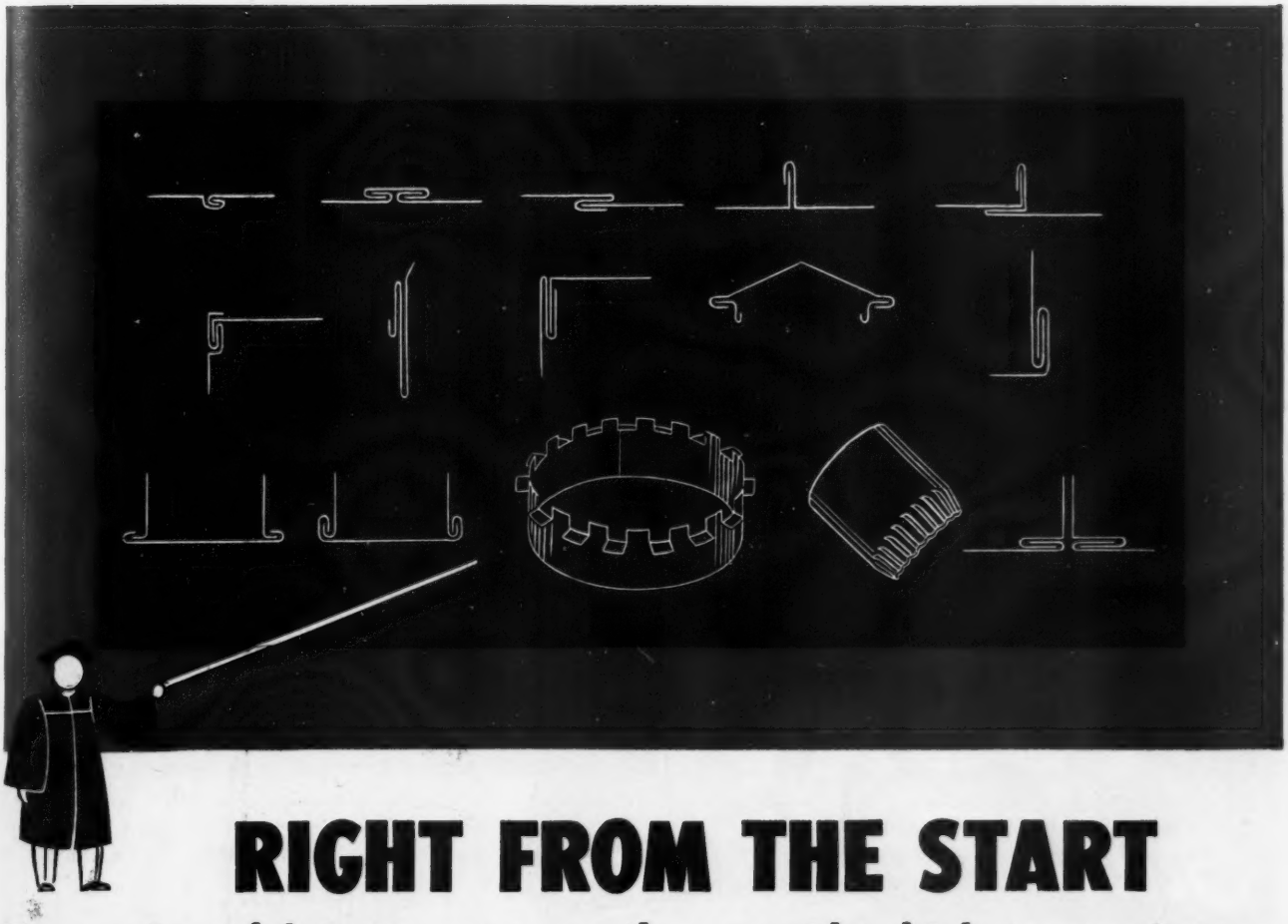
Series 600

Luxaire

Buy More War Bonds and Stamps

WARM AIR FURNACES . . . AIR CONDITIONING UNITS . . . COAL . . . GAS . . . OIL

THE C. A. OLSEN MANUFACTURING CO., ELYRIA, OHIO



RIGHT FROM THE START

Toncan Iron fabricates more easily—provides high rust-resistance

A big reason for the popularity of Toncan Iron is its high, uniform ductility—that starts with a highly-refined open hearth iron of exceptional purity.

But Toncan is more than an iron. It is an *alloyed* iron containing *twice as much copper* as copper-bearing steel *plus molybdenum* in correct proportion to refine the grain structure and make the copper more effective. That's why Toncan Iron has the highest rust-resistance of all ferrous materials in its price class.

The copper and molybdenum content of Toncan Iron is why you can't buy it now. These strategic war materials are needed to give fighting qualities to war machines.

But until Toncan Iron comes back, remember these facts. Its high ductility means it's easy to work—free from hard spots—won't chip or crack. It can be fabricated with practically no effect upon its rust-resistance, which goes all through the metal. Welds can be made quickly and with equal resistance against rust.

For 35 years, Toncan Iron has meant fast, low-cost fabrication, less sheet spoilage, accurate cost figuring and longer service. And when Toncan Iron *does* come back, it will be even better—because of our war experience with many new developments in ferrous materials.

For news of developments in the return of Toncan Iron, keep a line on your Republic Toncan distributor. Ask him to send you the booklet, "How Toncan Iron makes Money for Sheet Metal Contractors and Fabricators." If you don't know his name, write us.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Berger Manufacturing Division • Culvert Division
Niles Steel Products Division • Steel and Tubes Division
Union Drawn Steel Division • Truscon Steel Company
Export Department: Chrysler Bldg., New York 17, N. Y.

Republic

REPUBLIC STEEL — PRODUCTION FOR VICTORY

TONCAN COPPER MOLYBDENUM IRON

Other Republic Products include Carbon, Alloy and Stainless Steels—Pipe, Sheets, Plates, Strip, Bars, Wire, Rails and Rods, Tubing

MONCRIEF

A PIONEER IN THE FIELD

TODAY- *Still a Top-Notcher*

A PIONEER since the horse-and-buggy days, MONCRIEF'S leadership of almost 50 years in the warm air heating field never has been successfully challenged.

Today with those 50 years of "Know How" Moncrief products are still top-notchers in their field. Moncrief products are of proven design and sound construction.

Moncrief, today, as always, offers the biggest dollar value possible in heating equipment, pipe and fittings.

It is our determination that MONCRIEF the Pioneer shall always be a top-notcher in the field of warm air heating equipment.

SERIES C- COAL BURNING HAND FIRED FURNACE

WARM AIR FURNACES

FURNACE PIPE AND FITTINGS

MONCRIEF
SINCE 1895

AIR CONDITIONING SYSTEMS

FOR COAL . . . GAS . . . OIL

THE HENRY FURNACE CO. **MEDINA, OHIO**

For tomorrow - new economy and efficiency with

SuVeneer® CLAD METAL

®Trademark Reg. U. S. Pat. Off.

Mass housing requirements after Victory will be met by plans laid now—planning shared by designers in scores of different fields. For electrical products, SuVeneer Clad Metal in its form of *copper* inseparably bonded to steel, offers the important new advantage of copper's conductivity *plus* a strong backbone of steel . . . and low cost, easy fabrication, complete dependability.

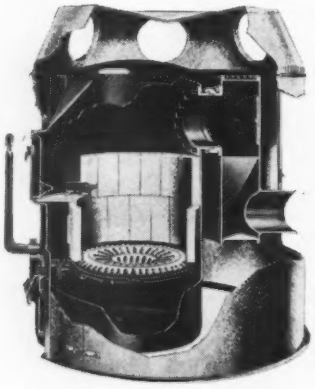
Wherever you'll wish to use *copper with the strength of steel,* war-proved SuVeneer Clad Metal invites your interest—now!

Superior Steel
CORPORATION
CARNEGIE · PENNSYLVANIA

SOME THINGS — WILL NEVER CHANGE!

Rudy

★ QUALITY
★ INGENUITY
★ CRAFTSMANSHIP



AVAILABLE NOW!

THE NEW RUDY XM SERIES STEEL COAL GRAVITY FURNACE.

A sturdy riveted and welded steel furnace to help you get those profitable replacement sales. Write for details on Rudy's attractive discount policy.

Your postwar customers will expect new ideas in design and construction — and thanks to Rudy's continuing study and research, you will be able to give them the finest and latest in specialized home heating at no sacrifice in famous Rudy Quality, Ingenuity and Craftsmanship. These three basic elements have been an integral part of Rudy Furnaces for 30 years and will continue to give Rudy dealers definite sales leadership and prestige.

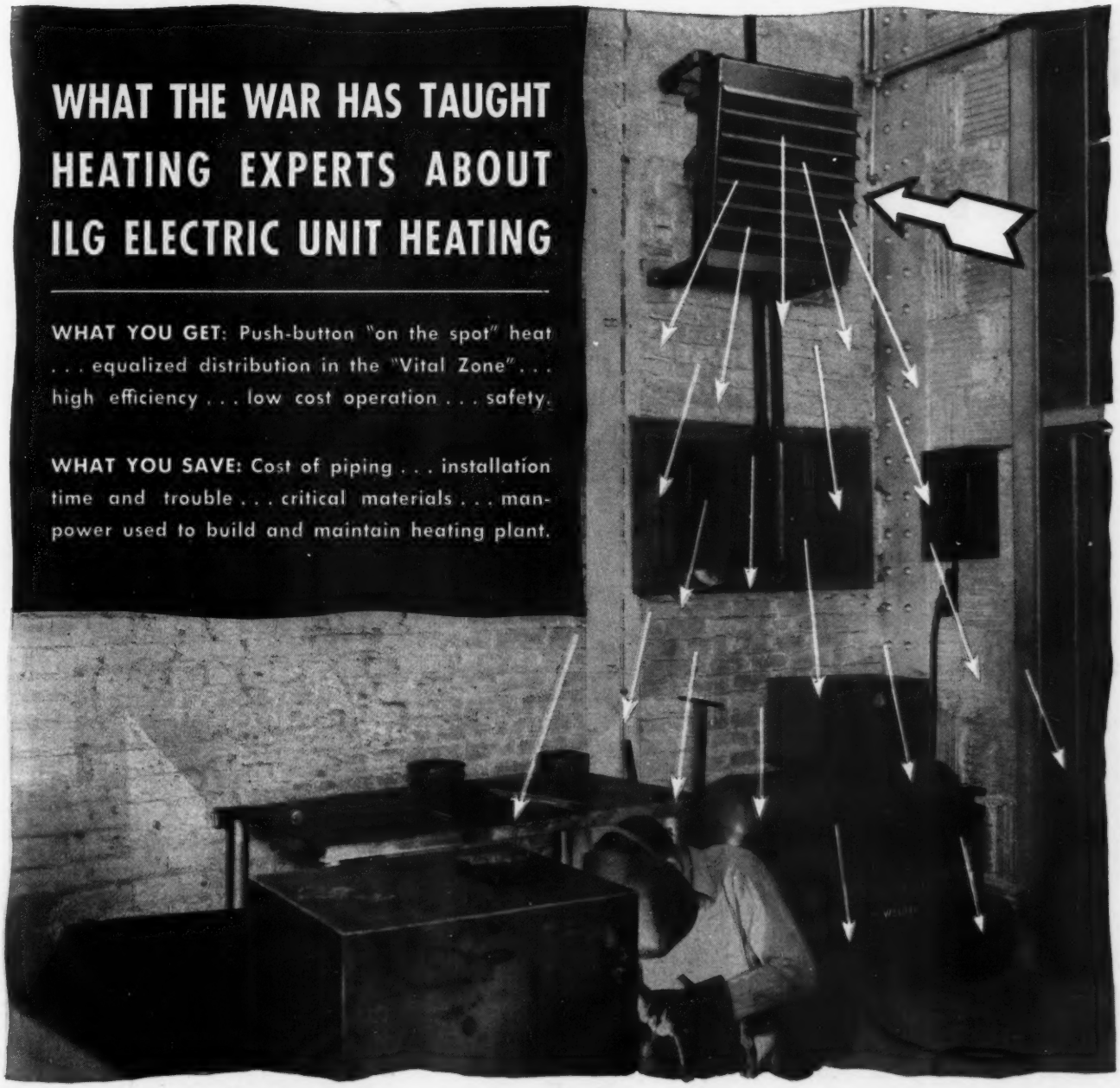
RUDY FURNACE COMPANY • DOWAGIAC, MICH.

EVEN FINER RUDY PRODUCTS FOR THE WORLD OF TOMORROW

WHAT THE WAR HAS TAUGHT HEATING EXPERTS ABOUT ILG ELECTRIC UNIT HEATING

WHAT YOU GET: Push-button "on the spot" heat . . . equalized distribution in the "Vital Zone" . . . high efficiency . . . low cost operation . . . safety.

WHAT YOU SAVE: Cost of piping . . . installation time and trouble . . . critical materials . . . manpower used to build and maintain heating plant.



STEADILY growing in popularity since ILG originally pioneered electric coil unit heaters back in 1916 . . . Then came World War II . . . tremendous increases in electric current output . . . widespread demands from mushrooming industry and the armed services for safe, automatic, quickly installed heat, particularly for periodic, temporary or auxiliary heating of isolated or remote areas and buildings. Today, you'll find ILG Electric Unit Heaters in industry, army cantonments, naval bases and airports providing heat for drying processes, warehouse offices, recreation halls, gas stations, radio rooms, telephone centers, underground fortifications, in combustible surroundings. Tomorrow, with lowered electric rates and surplus power available, the applications will be unlimited for heating all types of buildings . . . for cold weather utilization of the load developed in summer for air conditioning apparatus. Get free bulletin for your files!

ILG ELECTRIC VENTILATING CO., CHICAGO 41, ILL.
2871 N. CRAWFORD AVENUE ☆ OFFICES IN 38 PRINCIPAL CITIES

GET FREE BULLETIN NO. 802
Call nearby ILG Branch Office (consult classified directory) or write today for *free* bulletin picturing complete range of Electric Unit Heaters now available.

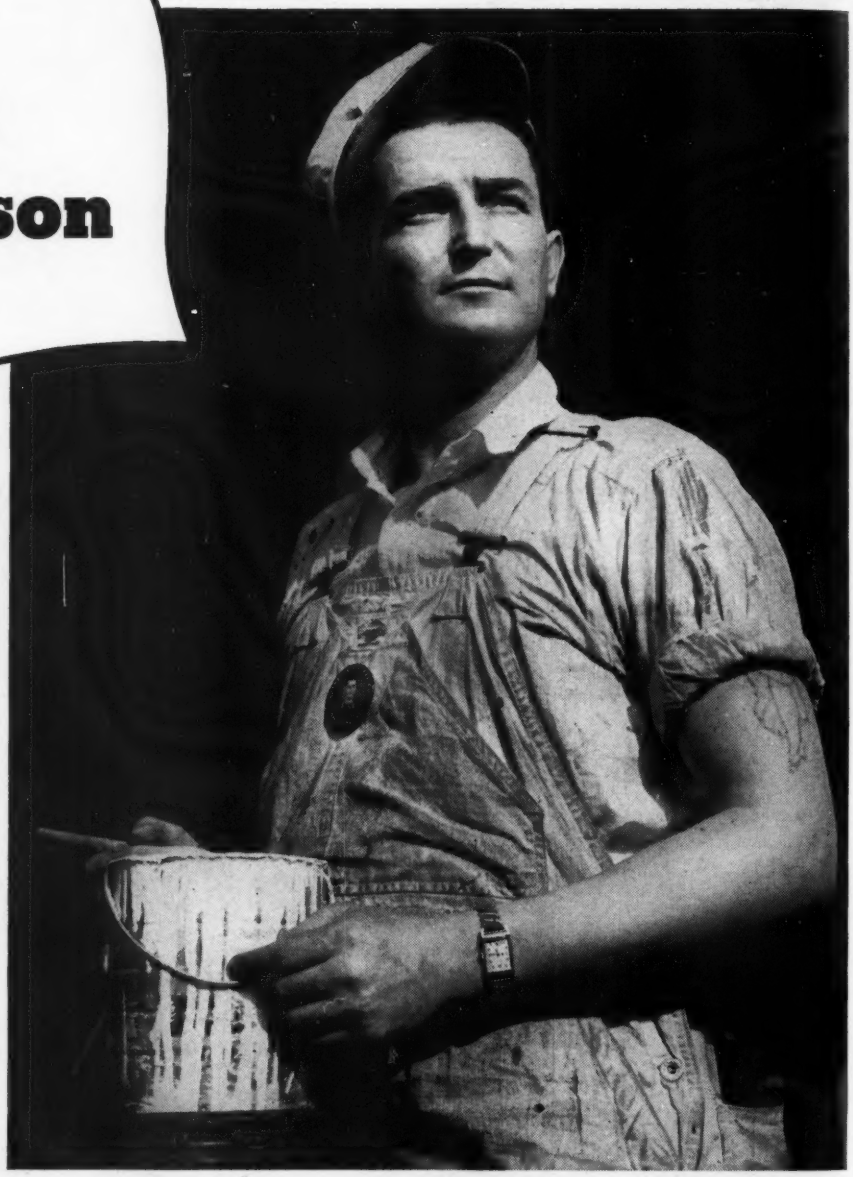
ARMY E NAVY

ILG

ELECTRIC UNIT HEATERS

ALSO MODELS FOR STEAM, HOT WATER, GAS-FIRED

Meet Ev Jackson



You'd probably like knowing Everett C. Jackson. He was born in Illinois and now lives in Baltimore. He's thirty-four and married, and he holds a job at Bethlehem's ship-repair yard on Key Highway in Baltimore.

Soon after Pearl Harbor, Everett Jackson left the yard to join the Army. A first-aid man in the Medical Corps, he survived the sinking of the troopship on which he was bound for Guadalcanal, and later took part in the invasion of Rendova and New Georgia.

He served on New Georgia for twenty-seven days, under continuous bombing and strafing, and finally was badly wounded. After that, there were months in hospitals, then the Purple Heart and a medical discharge. Then the return to civilian life—and his old job with Bethlehem.

"Working here," says Everett Jackson, "is the next best thing to being out there fighting. I know they need the ships that I'm helping to repair at Key Highway. I only wish more people could understand how real that need is."

★ ★ ★

Like Everett Jackson, other veterans of World War II are joining, or rejoining, the Bethlehem production army in steady numbers. Over 11,000 ex-service men, nearly half of them former Bethlehem employees, have been employed by us in steel-making, in ordnance production, and in building and repairing ships.

To their jobs these veterans are bringing great resources of willingness, efficiency, and adaptability—and a marked desire to be treated by the same standards that apply to other civilians. Some of them are moving ahead to added responsibilities—to higher-skilled work or supervisory duties.

Their service in the armed forces is over. But they are heartened by realizing that through their jobs in steel plant or shipyard they are still helping directly to bring the war to an early and victorious end.

★ ★ BETHLEHEM STEEL ★ ★

WORLD'S LARGEST SHIPBUILDER

SECOND LARGEST STEEL PRODUCER

Shipbuilding and Ship Repair Yards . . . Quincy, Hingham, East Boston, Mass. . . . Staten Island, Brooklyn, N. Y. . . . Hoboken, N. J. . . . Baltimore, Sparrows Point, Md. . . . San Francisco, Alameda, San Pedro, Calif.

Steel, Manufacturing and Fabricating Plants . . . Bethlehem, Steelton, Williamsport, Johnstown, Lebanon, Pottstown, Rankin, Leetsdale, Pa. . . . Bayonne, N.J. . . . Buffalo, Lackawanna, N. Y. . . . Sparrows Point, Md. . . . Chicago, Ill. . . . Tulsa, Okla. . . . South San Francisco, Los Angeles, Alameda, Calif. . . . Seattle, Wash.

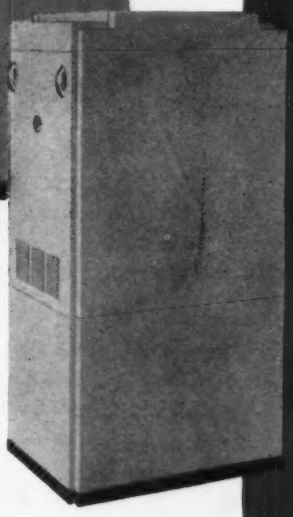
Leaders FOR VOLUME SALES

This Viking oil burning water heater is a sales leader in every way. Fully automatic, it is easy to install and dependable for full capacity hot water supply with maximum economy.
For many dealers this unit has been the original sale that has led to subsequent sales of other Viking equipment from floor furnaces and space heaters to year 'round air conditioning central heating installations.

Viking Offers You a Complete Line

The modern Viking line offers you a complete setup of heating, cooling, cooking, air conditioning and commercial refrigeration equipment. Conversion burners, automatic furnaces, boilers, summer air conditioners (complete, or for auxiliary hookup to already installed heating plants), year round heating, cooling and air conditioning equipment, plus a fast selling group of package units—space heaters, floor furnaces and room coolers.

WHOLESALERS: All Viking equipment is distributed through wholesalers only. We'll be glad to discuss our line and marketing plans with you now, as we enter a period of increasing production for civilian trade. Write us today.



The Viking Oil Burning Water Heater provides maximum economy and ample hot water capacity. Fully insulated and entirely automatic. Many thousands in use. Available in 20, 30 and 45 gal. Capacities.

Viking Automatic Furnaces, available in both Oil and Gas fired models, offer every desirable feature. The oil fired model shown is forced warm air type employing centrifugal blower fan. Forced draft to vaporizing burner is supplied by small auxiliary blower when high fire is operating. Gravity models also available in a wide range of capacities.

Viking Year Round Heating, Cooling and Air Conditioning equipment is provided in a wide range of capacities for automatic indoor climate control in homes both small and large.

VIKING

MEMBER I.C.I. MOORE CLIMATE INSTITUTE DIVISION OF MOORE DRYER COMPANY

Viking Mfg. Corp., 1601 U. B. Bldg., Dayton 2, Ohio

Gentlemen: Please send your new catalog to

Name_____ My preferred jobber is:

Firm Name_____ _____

Address_____ _____

Town and State_____ _____

Here's a Strong Trio for Post-War Success

The team we're thinking about is you, the Armco Distributor, and us.

You have the experience in sheet metal work; the Armco Distributor will have the sheet metals, delivery service, and plenty of business-getting aids; and we produce a complete range of special-purpose metals.

YOUR RIGHT-HAND MAN

But let's take a closer look at the center man—the Armco Distributor. He puts a high value on his Armco franchise because he knows it helps him serve you fully *with a good profit for both.* In ARMCO Ingot Iron, galvanized PAINTGRIP, ZINCGRIP, ZINCGRIP-PAINTGRIP, Enameling Iron, Stainless Steel, copper bearing, and regular steel, he has the most complete line of sheet metals in the industry.

HELPS YOU MAKE MONEY

The Armco Distributor also is in a class by himself in providing business-getting helps. After the war he again can give you a free subscription to *Armco Shop News,* a monthly paper chock-full of ideas and information; all kinds of handy shop-practice booklets; shop and job signs; blotters and seasonal post cards, sales and collection letters and newspaper advertisements—just about everything you need to promote and operate a successful business.

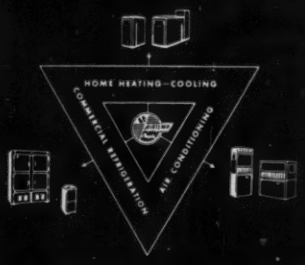
SPECIAL PURPOSE ★ ARMCO ★ SHEET METALS

Opportunities when peace comes If you want to go places after the war . . . if you want to get your share of the money-making jobs and do the work with sheet metals your customers know and trust . . . in short, if you want to make the most of what is shaping up as the greatest era the building industry has ever known—by all means be a member of this hard-hitting team.

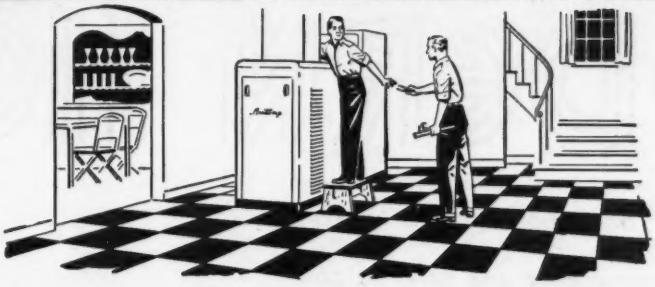
Yes, you and the Armco Distributor and Armco can go a long way together after the war. The American Rolling Mill Company, 1081 Curtis St., Middletown, Ohio.

GOOD EQUIPMENT + GOOD INSTALLATION =CUSTOMER SATISFACTION!

The quality of the installation is as important as the quality of the product. That is why Chrysler Airtemp has special, practical training courses on up-to-date selling and installation methods. Chrysler Airtemp heating equipment... burning all types of fuel... is "packaged" at the factory to make installations as simple as possible for the heating dealer.



THE TRIPLE LINE



PROPER INSTALLATIONS ARE MADE EASIER BY CHRYSLER AIRTEMP "PACKAGED" PRODUCTS

A new day is dawning in the heating industry. New, compact and more efficient units will bring new and greater indoor comfort to American homes.

Chrysler Airtemp—a pioneer in "Packaged" temperature-humidity control units—is pioneering, through advanced engineering and design, important new principles in domestic heating and cooling equipment.

The same spirit is developing a new conception of factory-dealer relationships which will enable heating dealers to "streamline" their operations. Dealers will be in a position to give home owners an assurance of dependable performance based on proper, adequate heating units—properly installed—to meet individual home requirements.

The Chrysler Airtemp Triple Line . . . heating, cooling and commercial refrigeration . . . offers heating dealers an opportunity for *12 months profitable operation.* Direct dealer contracts will be available for just the Chrysler Airtemp heating line—or for heating in combination with air conditioning or commercial refrigeration—or for all three lines.

You can win volume in sales and customer satisfaction . . . backed by Chrysler Airtemp products, as well as modern merchandising and installation methods.

The Indoor Climate Institute is making the American Public Conscious of the Need for Greater Indoor Comfort and Health.

MEMBER I.C.I. INDOOR CLIMATE INSTITUTE

Next Month's Advertisement Will Be Devoted to the Subject of Service

BUY WAR BONDS

CHRYSLER AIRTEMP

AIRTEMP DIVISION OF CHRYSLER CORPORATION • DAYTON, OHIO

Tune in Major Bowes every Thursday, CBS., 9 p.m., E. W. T.

YOUR CUSTOMERS OF TOMORROW *want*

MODERN HEAT

Whether they build or remodel, your postwar customers want the convenience and carefree comfort of Modern Heat — WEIR-MEYER Heat.

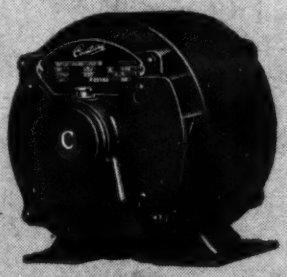
Leadership is a habit with WEIR-MEYER. Back of WEIR-MEYER is the practical knowledge of three generations of on-the-job experience. Engineering and production for vast Military and other war needs brought added "know-how".

You can depend on WEIR-MEYER for Modern Heat. Plan NOW for Postwar — get the facts about WEIR-MEYER Modern Heat.

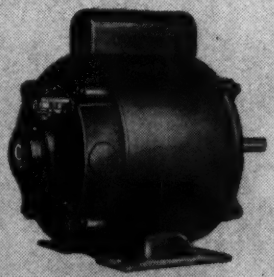
THE MEYER FURNACE CO.
manufacturers of
WEIR and MEYER FURNACES—AIR CONDITIONERS
FOR
COAL - GAS - OIL
PEORIA 2, ILLINOIS

Limited quantities of WEIR-MEYER Riveted & Welded Steel Furnaces are available for essential civilian needs — write us your requirements.

WEIR-MEYER MEANS *Modern Heat*

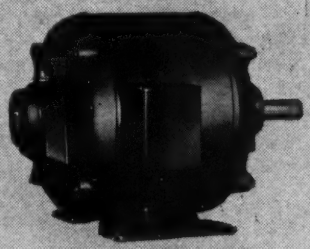


Split Phase Induction Motor
Built in sizes 1/20 to 1/3 horsepower

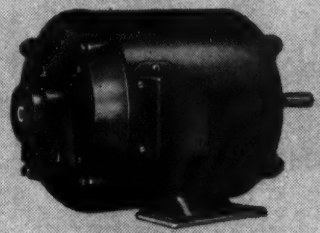


Capacitor Start Single Phase Induction Motor
Built in sizes 1/20 to 20 horsepower

Single Phase Repulsion Start Induction Brush Lifting Motor
Built in sizes up to 20 horsepower



Polyphase Squirrel Cage Induction Motor
Built in sizes 1/6 to 600 horsepower



Direct Current Motor
Built in sizes 1/20 to 300 horsepower

You Can Build More Enthusiastic Customers By Selecting From

CENTURY'S COMPLETE LINE of Air Conditioning Motors

There's a Century Motor available to supply top performance for every piece of air conditioning equipment.

To meet the specialized requirements of air conditioning, Century offers:

Refrigeration Compressor Motors	Blower Motors
Unit Heater Motors	Pump Motors
	Stoker Motors

The line of Century Motors includes:

Single Phase	Open	Cushion Mounting
Polyphase	Totally Enclosed	Rigid Mounting
Direct Current	Dust Proof	
	Drip Proof	Ball Bearing
Vertical	Splash Proof	Sleeve Bearing
Horizontal	Explosion Proof	

In addition to their many features that contribute to quiet starting, quiet operation, and unusual freedom from vibration, Century's insulation protects the vital windings of the motor against the destructive effects of damp surroundings or where sweating frequently occurs. These features contribute to long motor life and, consequently, more enthusiastic customers.

Specify Century Motors.

Century C MOTORS

CENTURY ELECTRIC CO.

1806 Pine Street, St. Louis 3, Missouri

District Offices in 30 Principal Cities

370

Less TNT for Lunch In This War

LIQUID FUEL FIRED ROLLING KITCHENS with "DL" FLOAT VALVE

In World War I, the smoke of coal or wood fired rolling kitchens made a fine target for artillery and bombers. Nothing could be done to conceal it, and as a result, bombardment and bombing at mealtime were a regular diet.

Our doughboys now eat meals prepared in field ranges fired by gasoline or oil. No telltale smoke reveals the location of mealtime concentrations of men. Kitchens can be operated after nightfall if needed, because they do not glow. "DL" Float Valves control many of these field range burners.

All over the world, wherever our fighting men are stationed, will be found cooking ranges, furnaces, tent heaters and water heaters equipped with "DL" Float Valves.

Because they are very reliable and easy to clean and service, "DL" Float Valves are in demand by manufacturers of war equipment.

When oil burning stoves and furnaces again appear on the market, make sure the line you select is equipped with "DL" products.

An Exclusive "DL" Float Valve Feature....

AUTOMATIC TEMPERATURE COMPENSATION

Fuel oil viscosity increases as its temperature drops. An ordinary needle or float valve either does not feed enough when oil is cool or cold, or feeds too much when it is warm. • The "DL" Float Valve has a simple temperature compensatian which opens the valve more when the oil is cold—reduces the orifice when the oil is warm. • This is an exclusive "DL" feature.

DETROIT LUBRICATOR COMPANY *General Offices:* **DETROIT 8, MICHIGAN**

Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION

Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • Radiator Valves and Balancing Fittings • Arco-Detroit Air and Vent Valves • "Detroit" Expansion Valves and Refrigeration Accessories • Air Filters • Stationary and Locomotive Lubricators

MASS Precision PRODUCTION

is not merely turning out large quantities of items. Such words as "exact"—"identical"—also enter into modern mass precision production.

Morrison Steel Products learned mass precision production before the war—through long association with the automotive industry...and applied it to the Mor-Mac furnace line with excellent results. All this experience, coupled with the added knowledge gained from war production, will add up to something extra special after restrictions are lifted—the new and revolutionary MOR-SUN line of PRESSED STEEL furnaces—for coal, gas, oil.

MORRISON STEEL PRODUCTS, INC. BUFFALO 7, N.Y.

Limited number of pre-war Mor-Mac Furnaces in most sizes are available for immediate shipment on proper priority. Write or wire for details.

☆☆ A Real

. . . . for the

Sell HONEYWELL

RELEASED BY FUEL

Here is the first real break for the heating trade since restrictions were placed on the manufacture and sale of heating equipment.

As part of the national fuel conservation program, materials have been released for Minneapolis-Honeywell damper regulators for hand fired home heating plants.

A REAL OPPORTUNITY FOR YOU

This means a real honest to goodness opportunity for the heating trade to make some real money—and fast. Every home owner knows what it means to be short of fuel.

Every one of them wants the comfort they have been denied and the opportunity to save fuel and money as well. You'll find your customers will virtually fight to obtain an Electric Janitor because of the two-fold job it does. Remember, you're just selling something, you're giving a service your customers won't forget because the Electric Janitor will quickly pay for itself as it saves 10 to 30% fuel.

NATIONALLY ADVERTISED

The Honeywell Electric Janitor is nationally recognized. It carries the Minneapolis-Honeywell name, which stands for the finest in automatic heating controls. It has been advertised for many years and today is being featured on Columbia Broadcasting System's coast-to-coast network. It is also being featured in most leading national magazines such as American Home, Better Homes & Gardens, House Beautiful, House & Garden, Life, Saturday Evening Post, Colliers, Time and others.

ORDER AT ONCE

You can't go wrong when you stock a supply of Honeywell Electric Janitor packages. They give you a splendid profit, along with an additional income from installation. Wire your order to your jobber today. The supply is sure to be limited. Minneapolis-Honeywell Regulator Company, 2726 Fourth Avenue South, Minneapolis 8, Minnesota. Branch and distributing offices in all principal cities.

Show Your Customers How They Can Save

10 to 30%

Plus— 24 HOUR COMFORT

Profits NOW... Prospects FOR AUTOMATI

elBreak ☆☆☆

HEATING DEALER

L DAMPER CONTROLS

UE CONSERVATION ORDER!

HE HONEYWELL ELECTRIC JANITOR PACKAGE

e complete — even down to pulleys, sta-les and wire. It includes the famous Electric Janitor damper motor, the excep-ionally accurate Honeywell heat-levelling hermostat, transformer and all necessary ccessories.

The Electric Janitor Package is also vailable, at slight extra cost, with a limit ontrol, and also with the Da-Nite ther-nostat, which automatically reduces tem-peratures to a fuel saving level at night nd automatically restores the comfort evel in the morning before the family rises.

The Electric Janitor can be easily and uickly installed in any hand fired coal eating plant by your service man in a ery short time. The average home owner an do it himself, if your service depart-ment is undermanned.

HONEYWELL Electric Janitor PACKAGE

$23.00

LIST PRICE

ADVERTISED CONSUMER PRICE $23.00 PLUS INSTALLATION

n: . . . The Blue Jacket Choir with Danny O'Neil
Sunday 11:05 to 11:30 A.M., Eastern War Time, C.B.S

MINNEAPOLIS **Honeywell**

CONTROL SYSTEMS

ATI EATING...

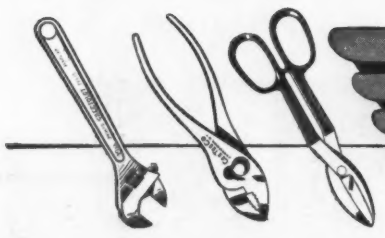
"A CRESCENT WRENCH, A PAIR OF PLIERS AND A LOT OF CUSSING," BUT

They Lived to Fight Again

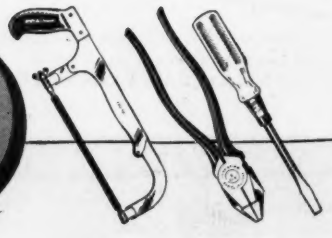
● According to the news dispatches, the crew of this unnamed Flying Fortress had already jettisoned every removable piece of equipment . . . guns, flak suits, armor plating and ammunition, but the badly-hit plane was still losing altitude. Then their eyes centered on the 8-ton ball turret. If they could only get rid of that, they had a chance of getting back to home base. They had been told in lectures that it was impossible to remove a ball turret in flight, but they decided to try. Four battle-wise sergeants went to work. Net result: in fifteen minutes with the aid of "a Crescent Wrench, a pair of pliers and a lot of cussing," they were able to drop the turret, and thus lightened, the ship zoomed up and on to England, and safety. That's the story, and that is why there are plenty of Crescent Wrenches over Axis territory, and very few in the hands of Crescent dealers. With Victory, the tables will be reversed. Even now, small though the supply, we are filling as many home front orders as possible.

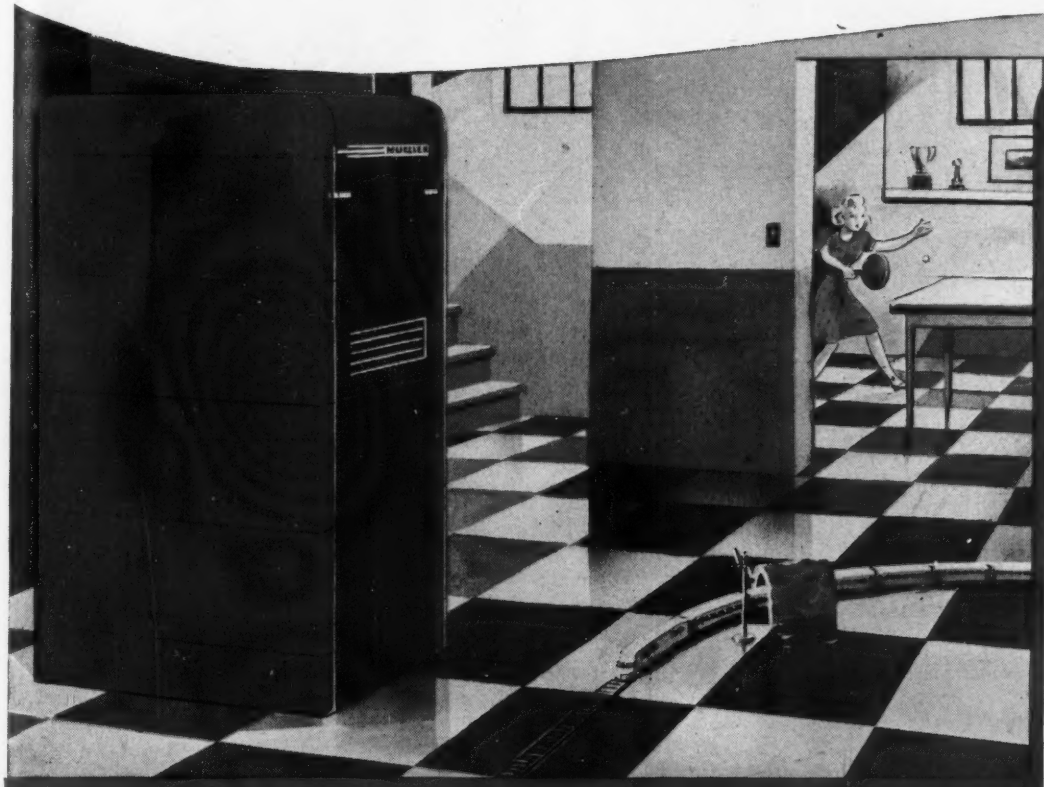
Crescent Tool Co., Jamestown, N. Y.

ARMY (E) NAVY



CRESCENT TOOLS
Give Wings to Work





PLANNING *for Indoor Comfort*

is an important factor in your post-war success

Be assured of providing it in your homes — with an attractive, dependable, modern and economical

MUELLER *Climatrol*
WINTER AIR CONDITIONER

One of the deepest satisfactions of owning a home is true indoor comfort. It is important that you secure as much of the building budget as necessary in order to give your customers this satisfaction. To make certain that you satisfy this strong desire, install a Mueller system . . . made by a company with an 87-year record of heating progress . . . and selected from a line that assures exactly the right equipment for specific needs. • Mueller offers, from one dependable source, furnaces and winter air conditioners for homes of every size, type, and price range (old or new) . . . specifically designed for the chosen fuel . . . good-looking, efficient. • Selling indoor comfort — the Mueller way — means a higher average size of contract — a better profit margin — and a reputation for delivering real satisfaction. Write now for bulletins. . . . *L. J. Mueller Furnace Company, 2010 W. Oklahoma Ave., Milwaukee 7, Wis.*

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Gas Mueller equipment includes gas-fired winter air conditioners, gravity furnaces, and boilers for steam or hot water.

Oil Just the right size and type for any home, in the complete Mueller oil-fired line.

Coal Complete selection of coal-fired winter air conditioners and gravity furnaces, including special stoker-fired model.

MUELLER *Climatrol*
HEATING AND WINTER AIR CONDITIONING

AN OLD LADY, in this country only a short time, went into a second-hand store and inquired regarding a price of a piece of furniture. The storekeeper said that the price was $7.00.

"I'll give you $9.00," said the old lady.

"Well, I said it was only $7.00," replied the storekeeper.

"Oh, I thought you said $11.00," exclaimed the old lady. "I'll give you $5.00."

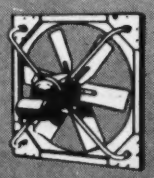
It is the custom in many foreign countries that everything is bought and sold through such bargaining. The "American Way" is to have a "one price" policy plainly marked with a price tag on the merchandise.

When "or equal" is written in the specification, you can be certain that there will be bargaining between the owner and his architect and the contractor or sub-contractor. It is apparent under this "or equal" clause, the contractor has been forced by necessity to use the lowest price quoted to him or he would likely have lost the contract to a competitor. With the contract secured, the contractor must bargain with the owner and architect to have the low-priced articles approved as equal. The owner and architect have to be sold all over again for they, too, like a reputable contractor, are concerned about the quality of the building. If the contractor loses in this bargaining, he'll lose money. If he wins — nine times out of ten the quality of the building has been lowered. Delays are the result and as a rule everybody loses.

The "base bid and alternate" specification is the "American Way." Price tags are out in the open and the owner and his architect can select the best value after proper consideration of quality, price, service and delivery. When this selection has been made, the contract can be signed with no bargaining. The owner receives the building he desires at a fair price and the contractor comes out of the job with his good reputation plus a profit.

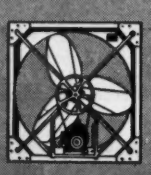
Let's write "base bid and alternate" specifications and do business the American way.

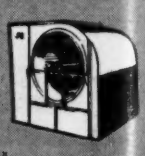
We would like to add to our organization a number of qualified Product Application Engineers having had experience with unit heaters, unit ventilators, propeller fans, blowers, or related heating and ventilating products. Openings in our branch offices in the larger northern cities are available to men who wish to make a connection with a sound company manufacturing quality products of this type. Compensation will be on a salary and bonus basis. Write Mr. Charles Stock, General Sales Manager, at the Moline Office, if you are interested.



Herman Nelson Autovent Direct Drive Propeller Fans

Herman Nelson Autovent Belt Drive Propeller Fans





Herman Nelson Autovent Type H Blowers

ld way or the American way

Bidding Practice for Building Materials

Advocated by The Producers' Council

How It Works The specifier names one product to be used as basis of the regular bid.

Bidders are permitted to offer other products at the same price or at an addition to or deduction from the regular bid. This brings alternate choices directly to the attention of specifier and owner.

How It Affects Award of Contract The architect or engineer decides before the contract is let what product will be used, taking into consideration any advantages to be gained by using any of the alternates.

How It Affects Contractor and Sub-contractor Normal bidding and buying practices are not interfered with, but most negotiations are completed prior to the award of the contract by the owner.

Undesirable pressure is removed from the contractor to furnish a product on which his bid was not based.

Pressure is similarly removed from sub-contractors and material men after the award of the principal contract.

How It Affects the Specifier and Owner The specifier will not be required thereafter to approve materials or equipment as equal to something else.

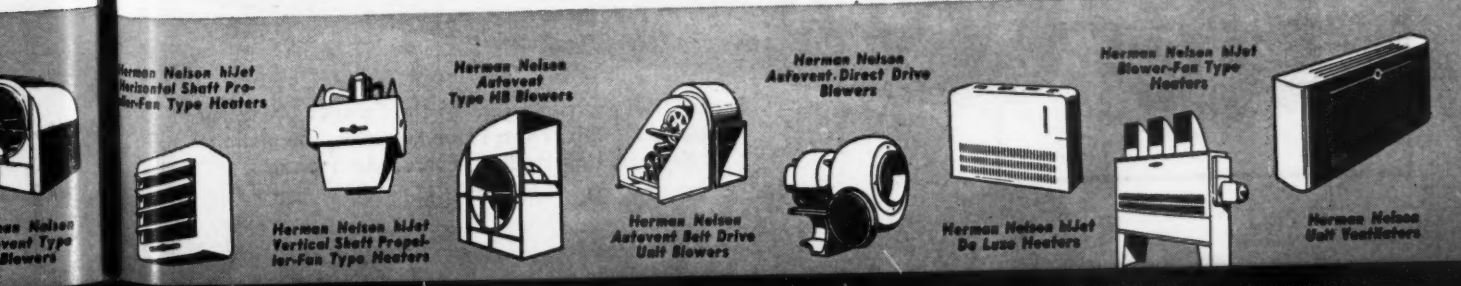
The owner will have the assurance that he will get what has been agreed upon, without substitution.

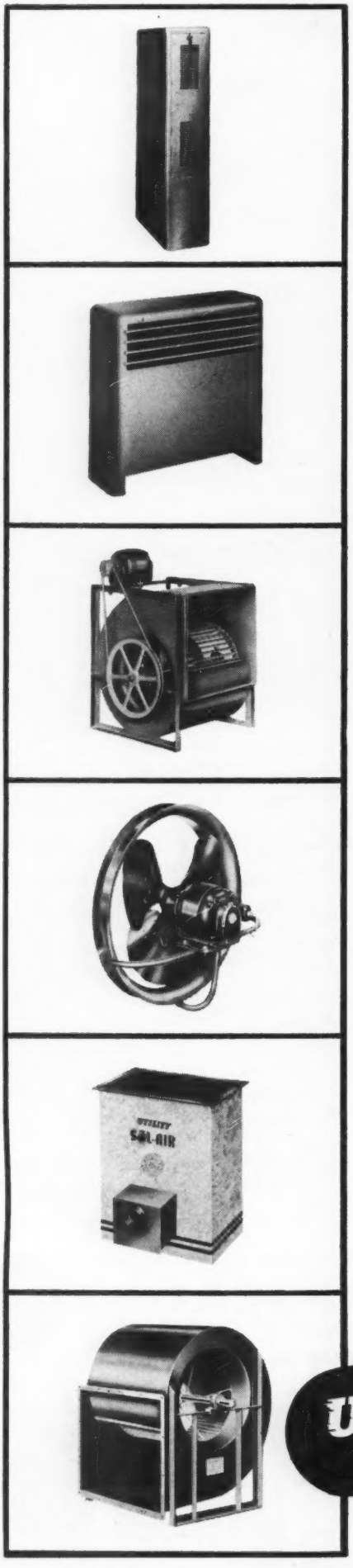
Approved by The American Institute of Architects

THE HERMAN NELSON CORPORATION

Manufacturers of Quality Heating and Ventilating Products

GENERAL OFFICES: MOLINE, ILLINOIS • FACTORIES AT MOLINE AND CHICAGO, ILLINOIS


Herman Nelson hiJet Horizontal Shaft Propeller-Fan Type Heaters
Herman Nelson hiJet Vertical Shaft Propeller-Fan Type Heaters
Herman Nelson Autovent Type HB Blowers
Herman Nelson Autovent Belt Drive Unit Blowers
Herman Nelson Autovent-Direct Drive Blowers
Herman Nelson hiJet De Luxe Heaters
Herman Nelson hiJet Blower-Fan Type Heaters
Herman Nelson Unit Ventilators



UTILITY

EVAPORATIVE AIR COOLERS

Utility Evaporative Air Coolers are available on AA5 or better priority without authorization from WPB, with certain exceptions. Coolers may be stocked for inventory or re-sale by obtaining approval from War Production Board on Form WPB-547 (PD-IX).

For exceptions and complete information, consult your local WPB office and ask for Order L-38 as amended May 10, 1944.

Utility Propeller Fans and Centrifugal Blowers are also available in accordance with WPB regulations. We will be glad to furnish complete information and literature.

EVAPORATIVE COOLERS FOR LOW-COST COMFORT

Utility air Koolers are the most efficient *low-cost* method of comfort cooling, for a wide range of commercial, industrial and domestic applications.

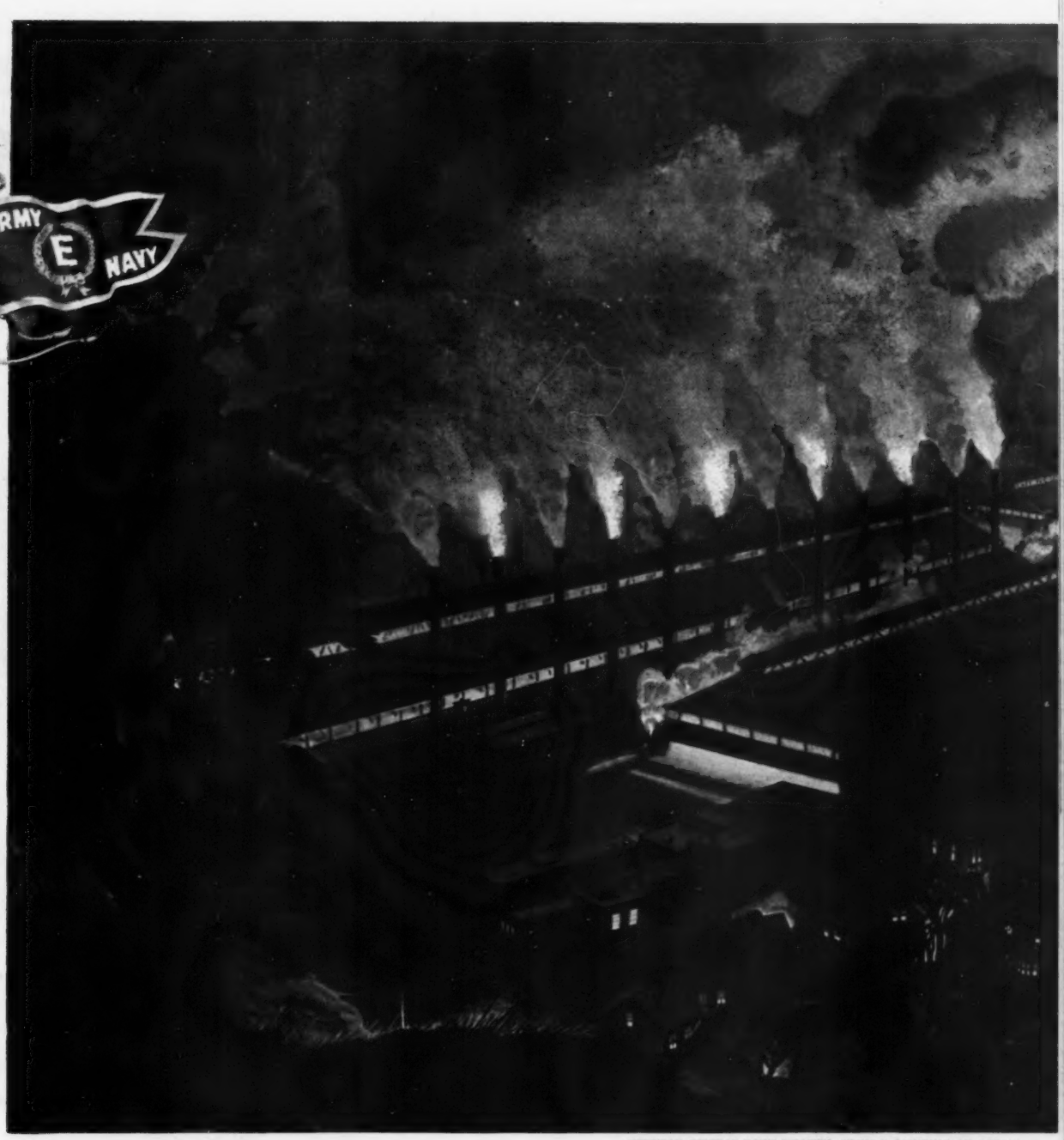
Evaporative coolers can be installed easily and quickly. They do not require extensive interior duct systems. Dealers and contractors can easily estimate the required size of cooler, with the help of Utility's sales manual. There is a minimum of service on evaporative coolers.

Both first cost and operating expense of Utility air Koolers is far less than for any other type of air cooling. The equipment is also effective for ventilation only, when cooling is not required.

UTILITY FAN CORPORATION

4851 South Alameda, Los Angeles 11, California

Peace-time manufacturers of the Famous Utility Air Koolers, Blowers, Fans, Floor Furnaces, Circulating Heaters, Unit Heaters, Forced Air Furnaces.



WEIRTON STEEL'S OPEN HEARTH. FROM A PAINTING BY SEFCIK

NOT ONE MINUTE LOST— Twelve thousand Weirton Steel employees have kept faith with their 34 fellow-workers who have made the supreme sacrifice in dying for victory. Weirton people are determined to continue keeping faith with the 3802 Weirton Steel men and all Americans who today are in the armed forces. Weirton is proud of its fighting men—proud, too, that to date, "Not one minute of production time has been lost in Weirton."

WEIRTON STEEL CO.

WEIRTON, WEST VIRGINIA • SALES OFFICES IN PRINCIPAL CITIES

DIVISION OF NATIONAL STEEL CORPORATION EXECUTIVE OFFICES, PITTSBURGH, PA.

SELL Sampsel COAL SAVING CONTROLS

No. 8870 Coal Saving Unit

Damper Motor with built-in Transformer; S-22 three wire, low voltage Standard thermostat; 33 ft. of color code conductor; chains, pulleys, staples, screws and hooks. Application: hand-fired coal burning equipment for warm air, steam, or hot water.

No. 8873 Coal Saving Unit

Same as No. 8870 plus Warm Air Limit Control. All accessories included. Principal application is hand-fired coal-burning furnaces. Dealers should urge prospects to spend the small additional amount for the added safety.

...and You SELL FUEL CONSERVATION

LITERALLY MILLIONS OF PROSPECTS

Nearly every hand-fired furnace or boiler owner is a prospect for Sampsel Coal Saving Controls. Cash in on the tremendous national O.W.I.-sponsored *coal conservation* program. Push Sampsel Coal Saving Controls. Packaged Units for your convenience. Powerful sales helps.

SAMPSEL TIME CONTROL, INC., SPRING VALLEY, ILLINOIS

IMMEDIATE DELIVERY

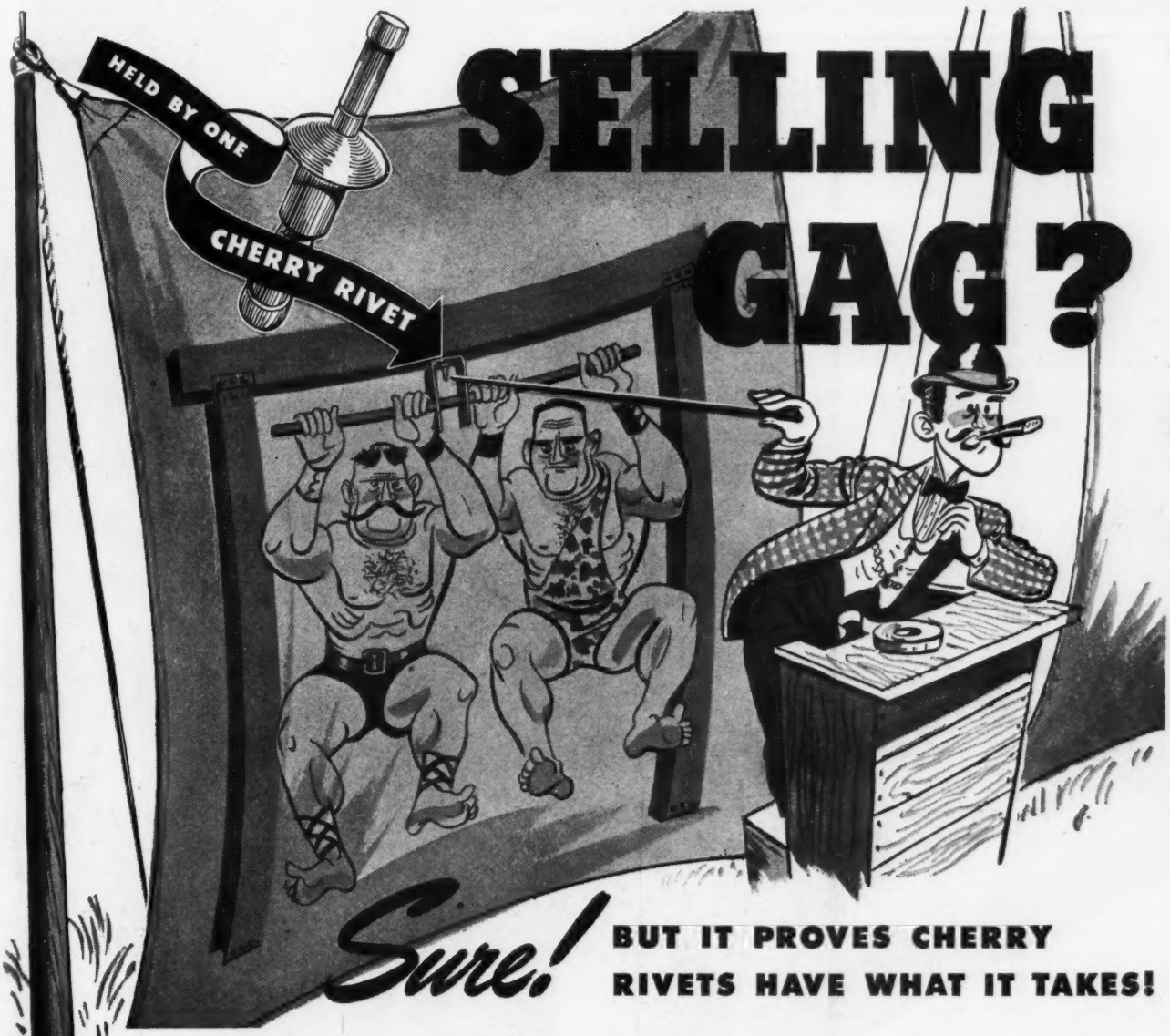
Rush your orders now. While stocks are good, there is a limit. Don't be left out of this profitable war time market. Help the war effort — and help yourself!

Completely PRECISION-BUILT by Sampsel

Sampsel Controls are precision built in their entirety by Sampsel. From design and engineering right on through to the dependable finished unit, Sampsel skill and knowledge demand highest quality materials and workmanship. Each Sampsel Control is thoroughly tested before it leaves the Sampsel factory.

That's why the Sampsel guarantee has meaning. That's why we say — WE Make WHAT WE SELL — WE Know WHAT WE MAKE!

Sampsel
AUTOMATIC CONTROLS



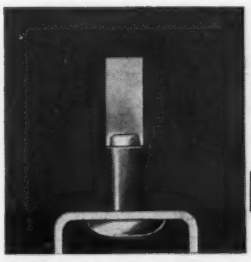
SELLING GAG?

Sure! BUT IT PROVES CHERRY RIVETS HAVE WHAT IT TAKES!

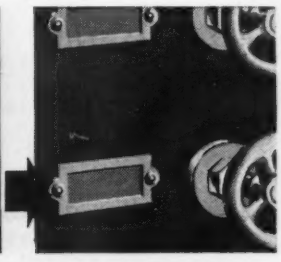
Cherry Rivets weren't made to do tricks with. But this trick—supporting a couple of husky bone-crushing palookas from a single Cherry Rivet, expanded (not headed) in a solid bar of metal—proves that Cherrys have more than enough shank expansion for any kind of job.*

Cherry Rivets are headed with a pull—not a pound. And so they work especially well in plastics, soft, pliable or brittle materials, as well as for all blind riveting in metal. The job is done from one side only—no bucking bar or backing up of any sort.

*Under a test pull of 730 lbs. the head pulled off this LS1127-6-10 Cherry Rivet but there was no movement of the shank in the blind hole.



Here's a close-up of how the Cherry Rivet is fastened tight in a solid base. Note it holds by shank expansion alone—no head.



Here's a practical application of this Cherry advantage—to fasten name plates on a solid base. Of course many other such uses.

CHERRY RIVETS, THEIR MANUFACTURE AND APPLICATION ARE COVERED BY U.S. PATENTS ISSUED AND PENDING

Cherry Rivet Company
LOS ANGELES, CALIFORNIA

Get this Handbook A-43 with the complete story of Cherry Rivets. Write Dept. A-200, Cherry Rivet Co., 231 Winston Street, Los Angeles 13.

Call Ryerson ...for quick steel

CALL THE PLANT NEAREST YOU

CHICAGO.....16th and Rockwell Sts.
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DETROIT.....1600 E. Euclid Ave.
Madison 3860

ST. LOUIS.....5 Clinton St.
Central 1020

CINCINNATI..Front St. and Freeman Ave.
Cherry 3232

CLEVELAND...E. 53rd and Lakeside Ave.
Henderson 1000

PITTSBURGH.....330 Grant St.
Walnut 7540; Carnegie 795

PHILADELPHIA.....5200 Grays Ave.
Bell-Belgrade 1412; Keystone-West 1644

BUFFALO.....40 Stanley St.
Humboldt 3311

NEW YORK.....203 Westside Ave.
Jersey City, N. J.
New York City.....Rector 2-3700
Newark.....Market 2-6067
Jersey City.....Bergen 4-1123

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JOSEPH T. RYERSON & SON, INC.

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Over 10,000 kinds, shapes and sizes in stock...

PROMPT, PERSONAL SERVICE ASSURED

RYERSON STEEL-SERVICE

Service on Controls, Stokers, Oil Burners

SOME weeks ago a questionnaire was mailed to several hundred readers asking them to describe the different heating equipment services each contractor is now offering to the public.

The replies were tabulated so that all readers may see just what is offered, how much is charged and how the dealer is pricing each service. The first three of these tabulations covering Manpower, Filters, Blowers were published in the June issue. Three more tabulations, covering Oil Burners, Stokers and Controls, appear in this issue.

Very briefly summarized, it seems that there is a distinct uniformity among the operations of our contractors. For instance, almost every dealer could use more service men if he could get them. And it is apparent that good service men are not born—it takes several years of down-in-the-basement experience to make a good service man. Secondly, warm air heating dealers now favor charging for heating equipment service by the hour—there are relatively few flat sum services, excepting in furnace cleaning. Third, most dealers seem to be doing about the same things in each type of service.

One of the most striking facts disclosed by the survey is that warm air heating dealers are now doing most of the heating equipment service—many of the former specialty services and also most of the firms which offered service as a means of selling coal or oil, etc., have now discontinued such service—probably because of a lack of manpower.

It seems to us that this point is important—if the nation accomplishes the fuel conservation so badly needed this year, our warm air heating dealers will have to do most of the service work.

Perhaps this summary on heating equipment service is a good place to point out that the price we ask for service is still ceilinged by Maximum Price Regulation No. 251. There is an item about MPR 251 in this issue. It seems that a revision of MPR 251 is in preparation and some groups in the construction industry have protested MPR 251 as unnecessary, impracticable and burdensome. It may be that the warm air heating industry should also enter its protest.

This also should be considered—if the amount you are now charging for heating equipment service does not show a profit you may not automatically raise your price—you must obtain approval from your local OPA office. But if you have increased your wage rate to service men and wish to increase your charge accordingly, you may file an application for increase. If you want to increase your charge for any other reason than increased wages, you should consult your OPA—there may be a basis for increase; or there may not.

It also will be wise for you to obtain from your local OPA a copy of Maximum Price Regulation 251 and see if you are meeting its provisions. While the controversy over the "most comparable job" is still being argued, and while you do not have to report every job as we were once told to do, and while you must give your customer a statement certifying your charges are in accordance with MPR 251 only if the customer demands one, it is still necessary to comply with MPR 251.

If your charges are satisfactory to meet your wage rate, it probably is easier for you to charge by the hour and give your customer as much or as little as he wishes than it is to try and juggle any flat-sum service which is ceilinged on price and established as to operations. Our understanding is that if you offered a flat sum service and also charged by the hour, you can automatically discontinue your flat sum service and offer, now, only by-the-hour service. If you offered only flat-sum service, you had better talk to your OPA if you now are losing money.

Finally, if the publicity program which Washington agencies have launched to urge home owners to buy fuel conservation measures brings in the flood of business anticipated, it will be well for every warm air heating dealer servicing heating equipment to study closely his costs and profits on service and take steps immediately to put this operation on a profitable basis. With so much service work of all kinds crying to be done it is unwise to continue to take business at a loss.

To determine whether you are making or losing money you must have an accurate cost accounting system. If your cost accounting system has not been overhauled in the last five years, now is the time to do so. If you have faith in your records, compare your costs and charges for similar service with the tabulations in this and the June issue and see if you are giving your customers and yourself a fair deal.

These Are Your 1944 "Costs"

By Arthur Roberts

MANY contractors and dealers talk glibly of "Costs" but few have a clear understanding of the subject, not realizing that the term "costs" covers a big field, hence, the purpose of this article is not to tell you how to install a costing system, but to define the various kinds of costs so that you are better able to apply and analyze the results of operations. Much that is written about costs is confusing because terms are used too loosely. This glossary of cost terms is something needed badly in this industry and the definitions must be understood to do a topflight costing job. Some of these costs may not be utilized by all contractors and dealers, nevertheless, we know that many have ignored them to disadvantage, and for this reason, clarification should be helpful.

1:—*Budgeted Costs.* These are planned estimates based on a scientific analysis of past performance and a forecast of future possibilities. Bugeted costs differ from haphazard "estimates," but the terms are often used synonymously.

If your "estimates" covering future operation are based upon careful research and an adequate costing system, they are budgeted costs. If you have no costing system and just carry the figures under your hat, making mental calculations as you go along, you are just using "guestimates." In the final analysis, of course, all phases of business operation, are based on estimates, but the estimates should be determined after careful study, not haphazardous speculation. We know contractors and dealers who have been misled by advice anent estimated costs given them by well-meaning individuals who informed them that estimates arrived at before or after operation aided efficiency, and then, when these contractors misconstrued the word "estimated" and "guestimated," instead of budgeting their costs, they went far astray on cost control.

2:—*Comparative Costs.* Period-to-period comparisons or period-within-period comparisons of cost figures. This year's costs with last year's costs, this month's costs with the same month last year, the cost of installing stokers against the cost of installing oil burners, etc. Any comparison of one cost with another for the same period or different periods. But be sure the comparison is sound. For example, do not compare costs for short periods with annual costs, or costs for busy seasons with costs for slump months because such comparisons may lead to erroneous deductions. It is surprising how many contractors and dealers make erroneous comparisons of this kind.

3:—*Normal Costs.* Once we heard a salesman ask a warm air heating dealer when he thought business would return to normal. "What do you mean by normal?", asked the dealer. The salesman was stumped. OPA has been trying to determine a "reasonable profit" for some time, but can't find the answer. Such generalities are hard to define, mean different things to different people, and may lead to trouble unless you understand what is meant by them. Some accountants define "normal costs" as the average cost for the past 12 months, but unless the businessman is aware of this definition when discussing "normal" costs, he may give another meaning to the term and arrive at an erroneous appraisal of his figures. "Normal" means usual or ordinary. When considering costs today in the light of prewar years, they are out-of-the-ordinary, hence, not normal, but there is no assurance that you will experience similar costs in any period of tomorrow. Costs or conditions are never normal when viewed in the light of other years, yet, the minds of many dealers and contractors are geared to costs of better days when thinking of "normal" costs. This is particularly dangerous now because it isn't likely that experience figures of prewar years can ever again be used as yardsticks for measuring operations under our war economy or in the postwar period. If this term is used in considering cost figures from outside sources or in discussing costs with others, make sure you understand its meaning before drawing conclusions.

4:—*Average Costs.* Also misunderstood and misapplied. Know what is meant by "average costs" before using them as guides. Average costs originate in two places, inside your organization and outside of it, gathered from other contractors and dealers by various research agencies. Outside figures are worth consideration, but should not be used as sole yardsticks of your managerial efficiency. Some members of this industry imagine that comparison of their figures with such averages is the all of business analysis.

Average costs within your organization have their uses but use them properly. Some businessmen use them as budgeted costs. This is dangerous. Unless each department or line is costed, they mean little. For example, the dealer selling furnaces, stokers and servicing automatic heating units could not safely use average costs for the three departments as a guide in making comparative studies and analyzing results. He must cost each line or department separately.

In more stable times, some businessmen averaged their costs for 3 to 5 years prior and used these figures for comparison with actual costs on current operations. Because costs have increased considerably since Pearl Harbor, this method is unsafe today. If costs go down in the postwar period, the same practice will be equally unsafe. In one case, the average will be too low, in the other case, too high.

In other words, average figures are used for comparative purposes, but to make the analysis dependable, you must be sure that all elements affecting the averages are the same or similar to the figures compared. Many contractors and dealers go wrong on their costs because of this blind spot in their viewpoint.

Some accounting textbooks say that average costs are normal costs but this may mean a different thing to different businessmen depending upon their understanding of the word "normal." Your average costs may or may not be "normal."

5:—*Mark-up on Cost.* The percentage you add to the cost of merchandise purchased for re-sale. The other way to figure the margin is to add a percentage to the selling price. You may use either method, but bear in mind that the percentages differ. For example, 40 per cent added to sales will give the same dollar margin as 66.7 per cent added to cost. If you use one method, stick to it. Switching from one to the other will play havoc.

6:—*Cost of Sales.* The cost of purchased goods plus incoming transportation charges on re-sale lines. The cost of labor and materials on installations and service.

7:—*Actual Costs.* What your books show you spend to buy and sell your wares and mechanical skill.

8:—*Departmental Costs.* The reader should break down total sales into departments or lines, not too many, but sufficient groupings to enable him to compare departmental profits. Many lose money on one line and make it up on another, yet, cannot isolate losses or trace them to source because they do not departmentize.

9:—*Cost Variance.* The difference between "bugeted" costs and "actual" costs. In a manufacturing plant or on installations and service, the difference between standard costs and actual costs.

10:—*Item Costs.* Recording the cost of each item under an account classification instead of lumping the charges under one head. For example, some businessmen charge all truck expense to one account, instead of separating gas and oil, repairs, tires, depreciation, insurance, etc., on their rolling stock, making it more difficult to analyze results and making comparative checks on items.

11:—*Truck Costs.* Cost of operating a truck without the driver's wages. Some include the driver's wages in truck costs, then try to appraise its operating efficiency with wages included. This gives an erroneous picture. Do not include driver's wages when analyzing the operating efficiency of a truck.

12:—*Over-all Cost or Total Cost.* The cost of sales plus overhead expense.

13:—*Direct Cost.* Cost that can be charged directly to a department or line.

14:—*Direct Job Cost.* Cost that can be charged directly to a job, such as permits, fees, licenses covering specified work, inspection fees, social security tax, etc. Sometimes called job expense.

15:—*Indirect Cost.* Cost not chargeable directly to a department or line, but must be allocated on a percentage basis. For example, depreciation of servicing equipment can be charged directly to the service department, rent may be charged to merchandising sales on the basis of floor space occupied by the showroom, but light, heat, power, office expense, etc., must be pro-rated on a percentage basis because it is impossible to determine the pro-rata share chargeable to each department.

16:—*Selling Cost per Customer or Sale.* The number of customers sold in the showroom during a period divided into the inside selling salaries. If outside salesmen, the number of sales divided into the outside selling salaries plus expenses. This is an average cost. Watch the trend. Some businessmen get the cost per sale for each salesman to determine comparative selling efficiency.

17:—*Detailed Costs.* Breaking down total costs into administrative, selling, collecting, advertising, delivery expense, etc.

18:—*Prime Cost.* The cost of labor, materials and direct job expense. Labor and materials not used on productive work is non-productive or indirect and should be listed under overhead expense.

19:—*Labor-hour Cost.* Time is one element common to all business organizations, hence, it is a good base for figuring costs. For example, 2 men work in the service department, 8 hours daily at $1 an hour, 16 hours daily, wage cost $16. If overhead is $16 a day, the labor-hour cost is $2 per manhour or $4 per hour for the 2 men. If the two men work 4 hours repairing a furnace, the labor-hour cost is $16. If one man works 5 hours servicing an oil burner, the labor hour cost is $10, which includes his wages and overhead chargeable to the job. Add cost of materials and net profit to get the proper selling price.

20:—*Cost per Chargeable Hour.* The total cost of a service department or plant divided by the productive hours or chargeable hours. Not of use on straight retail sales, but a good yardstick to check profitableness of war contract work or other extended contracts. Multiply the chargeable hour cost by the hours worked to get the over-all cost and then check against price received for the work to determine the profit.

21:—*Machine-hour Costs.* The total machine costs for a month divided by the hours a machine is expected to run or does run. If the worker is the principal agent in production, the labor-hour cost is the best basis. If the machine is the principal agent, with labor secondary, the machine-hour cost is most accurate.

22:—*Theoretical Costs.* What costs would be if you got maximum output or a perfect yield from labor and materials.

23:—*Unit Cost.* The cost per unit of production, such as servicing an oil burner, cleaning a furnace, producing a bomb fin or airplane part, etc.

24:—*Standard Cost.* A planned estimate of what your costs should be; a measurement of the efficiency of operations; a planned estimate of what should be done, not what may be done, fixed after reviewing prior operating figures, time studies, theoretical costs and a forecast of output, outgo and income for a forthcoming period.

You can see from the foregoing that the term "costs" has many different meanings and applications. Too many dealers and contractors take their total costs, compare them with previous periods and let it go at that. You must breakdown total costs into various classifications and analyze them accordingly.

Before you can do an intelligent job of recording, applying and analyzing costs, you must understand the foregoing terms thoroughly. Unless the reader gets a comprehensive picture of costing procedure and watches costs carefully from now on, it will cost him many dollars and many headaches because a new economy is in the making, an uncharted sea in which the businessman lacking adequate cost control, and there are many of them in this industry, will be as hapless as a pilot without a compass.

Arnold Kruckman's

Washington Letter

Plans for Lower Taxes—Postwar

THERE is much talk about lowering taxes from 40% to 50% after the war. You will hear some of this talk during the campaign. It will be more or less optimistically discussed by the candidates running for offices in your districts. The 25 members of the Republican Postwar Tax Study Committee of Congress will hold hearings throughout the country wherever the location will enable the largest number of voters to have their say. It is likely the Democrats will adopt the same method. The plan is regarded as an improvement over the usual process of making it necessary for people to come to Washington to testify at hearings. The Republicans developed the plan and the Democrats were sorry they had not thought of it first. The political aspect of the hearings and the discussions is worth bearing in mind. Obviously Congressmen and other politicians have as much interest in lowering tax rates as anybody else. They also pay taxes and are vitally affected by high taxes; but since it is a political year, and pleasant news is good political coin, it is natural that the politicians should try to sugar coat any potential bad news as long as it is possible.

Cost of Government—Postwar

You are, however, a business man; and a business man wants facts, whatever they may be, not dreams. Realism here in Washington does not accord with optimistic illusions that may appear in political debates. The experts in Government, both on the Hill and in the Treasury and elsewhere, have tackled the prospective budgets after the war like business men. They have come to the conclusion that it will cost not less than $20,000,000,000 each year to run the postwar Federal Government for some years, and that it probably may cost as much as $30,000,000,000. This naturally means the annual expenses will be nearer $25,000,000,000 than any lower figure. Obviously any future estimate at this time is guesswork. But it is intelligent guesswork, and therefore is worth sober consideration.

Usual expenses, including interest, are expected to total between $6,500,000,000 and $8,000,000,000; military expenses are estimated at from $5,500,000,000 to $9,000,000,000; veterans will require from $3,000,000,000 to $5,000,000,000; agriculture, from $1,500,000,000, to $2,000,000,000; relief and public works, $1,500,000,000 to $3,000,000,000; foreign relief, other relief, and Social Security, $2,000,000,000 to $3,000,000,000. This gives an aggregate ranging from $20,000,000,000 to $30,000,000,000 a year.

These estimates are not merely play figures, equations set down by those who toss totals around for the sake of discussion; they are carefully considered as reasonable expectations after months of exploration and verification. And it is striking that they agree with the estimate of postwar probabilities as given to this reporter many months ago by careful students and published in these columns. At that time some of you appeared to regard them comfortably, merely as theoretical hypotheses. They are no longer hypotheses; they are now working bases.

It is possible the military expenses may startle you. They should not. We often hear in Washington that we will require an armed force of approximately 2,500,000 for some years after the war. The assumption is reasonable. We cannot avoid our responsibility for keeping order in Europe and in Asia, or, at least, in doing our share. And you may feel shocked because we are expected to carry on foreign relief after the war. Yet it has been an inevitable conclusion that this responsibility also is an inexorable duty. We may not like it, but it is a concommitant of our obligation to help to keep order, and to restore the world to sanity. There are many realistic experts with good business sense who think this estimate of our budget after the war is too low. They say we still are blundering around in a kind of slap happy ignorance of what the world really will be like after this war is over.

Tax Collections Depend On Income

Assuming the estimated budget is sound, the problem is to find out how it can be met. Officials try to make it balance at three levels. They begin with $110,000,000,000 national income annually. They assume the lowest budget of $20,000,000,000 expenses could meet our Federal needs. They would not disturb the present tax rates and the present tax structure, which means we would go on paying over-all what we are paying now, in order to produce for the Treasury something between $20,000,000,000 and $22,000,000,000 each year. There would be no reduction, except that the excess profits tax would be taken out of corporation income exactions. Bear in mind, however, few of the experts here think this budget will do the job. An income of $110,000,000,000 a year is not expected to spell a nation busy in all its brackets. They anticipate it would mean that Government would be obliged

to provide some pump-priming; and when you run into pump-priming you run into potentials that might knock your estimated level of taxes galley west. You would probably be compelled to up the taxes. So that plan is rather dubious.

The next level of income is set at $120,000,000,000 a year, and those of you who vividly recall the national income of $67,550,000,000 for the year of 1939 do not feel any too enthusiastic about the probability of maintaining a level of $120,000,000,00. The way the experts calculate, present taxes and present tax set-up, with no excess-profits taxes, would put something around $26,000,000,000 in the Treasury; but if they can operate the Government at an expense of $20,000,000,000 a year, they could cut $6,000,000,000 off the tax bill, and pass this saving along to you and to me by removing excess profits, and clipping 30% off excise taxes, and cutting out the 3% normal tax on individuals, and wipe out the taxes on dividend payments from the corporate taxes.

The final level of national income for taxable hopes is predicated at $140,000,000,000, which seems purely theoretical and academic when you remember we are now running along at the rate of $150,000,000, the highest in history, and the highest during this war. But suppose it could be achieved; without disturbing any present tax mechanics except the excess profits tax, it is estimated the Treasury would be able to collect annually $31,000,000,000. Still operating on that theoretical minimum of $20,000,000,000 Federal outgo per year, you could save the taxpayers $11,000,000,000 which could be translated into the lopping off of the excess profits tax, cutting excise taxes in half, wiping off the slate the 3% individual normal tax, cut the first surtax rate on personal incomes from the present 20% to 15%, eliminate the capital stock tax and the declared-value excess-profits tax, and wipe out the tax on dividends from the corporate tax. They have worked out other combinations in this level of earnings and savings, some which would have more tax money for corporations, and others would save for the individual.

War Has Brought Tremendous Debt

It must be obvious that all these suggested plans of balancing the budget and reducing the tax exactions are highly hopeful and really do not operate in the realm of the probable. Nor are the reductions very substantial. Sober experts here know that as well as we do. They apparently have determined to give you the picture as it has been outlined in order that you may really understand the tremendous difficulties ahead. Above everything else the experts and the layman with common sense hope that taxpayers will grasp the idea that they have bought with the war a longtime heritage of huge debt and a very expensive Government. You can dodge neither for many, many years to come; and all this spells that you cannot anticipate very much difference in taxes if you wish to pay Government expenses as you go along. The only way to bring down taxes seems to be to reduce expenses; and to reduce expenses you will have to make cuts that do not seem to be either plausible or possible as the future of the world appears at this moment.

It is not going to be a very pleasant job to be a Congressman or a Senator or an earnest Government official in the years immediately ahead. Folks will demand lower taxes. Even now the harassed people of Government are throwing out the suggestion that reductions will be initiated as soon as the German war is over. They intimate you may expect some lowering by next July, a year from now, in 1945. It is quite probable the Congress may produce some varieties of headache powders, remedies of local nature, counter-irritants, to divert attention, and to occupy the mind. For instance, we may have legislation which will include changes that will tone down the excess-profits tax and other details of the corporation tax, to be made retroactive in application as of January 1, 1945. Changes both in corporation taxes and in individual taxes will probably be focussed on the purpose of providing an incentive to those who have some money to invest their capital, their "risk capital." The pump-priming this time is to be coaxed from the individual, from business. The tax policy according to one of the spokesman "must be aimed at stimulating a high level of production and employment by encouraging private investment and risk taking and by stimulating consumption of goods."

Where Tax Cuts Can Be Made

It also is good news that in some apparently informed quarters the word is given that taxation shall be formulated to balance the budget and to enable business to supply the revenue, not to make social reforms. If there are any real reductions it is not anticipated they can be expected until late in 1946 or in 1947. Obviously the whole program hangs on the eventualities of the war. In talking about reductions officials usually assume excess-profits rates will either be cut in two, if not entirely eliminated; normal and surtax is to be cut; credits might be allowed against normal income above $25,000; capital expenditures might be treated as current expenditures for tax purposes; consolidated returns on corporation surtax net income may be eliminated; reorganizations of corporations may be made less tax-exacting; the dual tax on dividends may be eliminated; capital stock tax and declared-value excess-profits tax are almost certain to be repealed; carry-back and carry-forward provisions may be changed to extend to 6 years.

Individual Tax Cut—Maybe

For individuals the hopes are not permitted to soar very high. The idea is that taxation of business is more repressive of prosperity than taxes on the individual. He who has a big income is to be given every incentive to invest it, not to save it. There is a strong suspicion, not yet verified by Government people, that the person with an income ranging from $10,000 to $100,000, takes most of the investment risks. If the exploration confirms this idea, taxpayers in this bracket will find their taxes reduced. At the same time, it is generally assumed the bulk of the purchasing power lies in the lower brackets, where 12,000,000 persons now pay income tax, and that it would be wisdom to remove the 3% normal and free them from all income tax and ease the taxes on several millions more, and thus increase the purchasing power. Excises will be cut cautiously, at first; when civilian goods increase in volume there will be deeper cuts, say about 1947; and when the final readjustment comes, excises will probably chiefly remain on beer, liquor, tobacco, and gasoline.

The withholding mechanics are almost certain to remain as a permanent part of our tax collection machinery, which means the business man must henceforth carry this expense as an overhead. Capital gains tax will probably be revised in such manner that a shorter term will enable the taxpayer to claim a long term classification, thereby decreasing the maximum

(*Continued on page* 121)

Interpretations, Amendments, Easements To Existing Orders

Tin Content in Solder

RULES governing the use of tin in solder have been modified, effective June 6, 1944.

The amended order splits the schedule into four parts. The new Schedule 1 covers miscellaneous items. Schedule 2 covers solder applications; Schedule 3, babbitt, and Schedule 4, the use of tin in brass and bronze alloys. The "Implements of War" clause, which formerly excepted military items from restrictions, has also been rewritten so that the restrictions apply to all schedules unless different specifications of the various Government procuring agencies require a higher tin content than provided for in the new schedules.

Where experience has proved that a low tin content solder is satisfactory, the lowest practical tin content solder is specified. In other cases, where it has again been definitely proved that a higher tin content solder will use no more tin per unit than a low tin solder, and, further, that the higher tin content solder will produce a superior item and reduce the man hours per item, higher tin content solder is specified.

Specific tin content solders have been regrouped for specific applications. The purchaser must certify that the solder is to be used *solely for a specific purpose* and that the tin content of such solder conforms to the restrictions and provisions of General Preference Order M-43. Some of these permit a lower tin content and some higher than in the present order.

Applications where large quantities of solder are used are fairly well covered in the various specific exemptions. For the relatively small quantity of solder used for other than specified applications the tin content of solder is specified as a *30 per cent maximum instead of 21 per cent*, as in the present order. This was done as result of experiments which definitely proved that the 21 per cent solder, when used with a "hand soldering" outfit, is not satisfactory for general use and, instead of conserving tin, actually wasteful.

It is not practical to cover every solder application, and there still remain a number of uses where it may be necessary to consider appeals for a higher tin content solder than is now permitted by Order M-43.

◆

Metal Windows Permitted

METAL windows may now be manufactured to fill orders with preference ratings of AA-5 or better, the War Production Board announced June 2. A rating of AA-3 or better was formerly needed. The change is effected by an amendment to Order L-77.

L-77, first issued in March 1942, prohibits the manufacture of metal windows except for the military and to fill orders with preference ratings of AA-5 or better.

The change in the rating structure may result in a slight increase in the use of metal windows for maintenance and repair, but any increase that may occur will be too small to necessitate the allotment of additional material or the use of additional labor.

◆

9% Increase on Some Furnaces

AN INCREASE of nine per cent in manufacturers' lowest published list prices in effect *prior to* August 4, 1943, for cast-iron, warm-air furnaces *burning wood, gas, or oil*, with a BTU output of 900,000 or less at the register or outlet, was announced June 24 by the Office of Price Administration.

A nine per cent increase was also granted manufacturers of repair parts for both cast-iron and steel warm-air furnaces.

The increases, effective June 24, 1944, apply only to sales made on an uninstalled basis. Provisions of two former actions which granted similar increases in prices of coal-burning cast-iron furnaces, and coal, gas, and oil-burning steel warm-air furnaces, are retained. As a result of the new action, the entire warm-air furnace field is covered by the adjustment in prices.

Dollars-and-cents increases resulting from the higher manufacturers' prices may be passed on by Jobbers to retailers and by retailers to customers of the furnaces and parts, OPA said.

A large group of commodities, known to the furnace industry as accessories and appurtenances (including such items as automatic controls, fans, blowers, burner assemblies, and the casings in which they are housed when not a part of the furnace casing) are not covered by the increase granted for furnaces and repair parts.

(Amendment No. 42 to Order A-1 Under Maximum Price Regulation No. 188—Manufacturers' Maximum Prices for Specified Building Materials and Consumers' Goods Other Than Apparel—effective June 24, 1944.)

◆

Pricing Rebuilt Fractional Motors

A NEW method for pricing rebuilt fractional horsepower electric motors was announced June 21 by OPA.

Effective June 26, 1944, the new method will establish *retail* prices for rebuilt motors of ¾ horsepower or less at: (1) 75 per cent of the list price of the nearest equivalent new motor, (2) plus an additional sum of $7, (3) less the following allowance for the exchange, transfer or trade-in of a used motor —$1 for ¼ h.p. or less, $2 for over ¼ h.p. and including ½ h.p., and $3 for over ½ h.p. and including ¾ h.p.

EXAMPLE: A buyer trades in a used ¼ h.p. motor on a rebuilt motor of the same size which lists at $12 when new. The maximum price for the rebuilt motor would be established by the following steps: (1) 75

per cent of $12 is $9, (2) $9 plus $7 is $16, (3) $16 less $1 trade-in allowance is $15, which is the maximum price.

For sales of rebuilt fractional horsepower motors at levels *other than at retail*, the maximum price will be 85 per cent of the retail price determined by the new pricing method described above.

A rebuilt motor, priced under provisions of this action, is one in which worn, defective, or missing parts have been replaced or repaired for successful operation and carries a binding guarantee of successful operation for not less than a year.

(Amendment No. 144 to Revised Supplementary Regulation No. 14—Modification of Maximum Prices Established by the General Maximum Price Regulation; and Amendment No. 119 to Maximum Price Regulation No. 136—Machines and Parts and Machinery Services—both effective June 26, 1944).

◆

Furnaces Not "Free"

THE recent amendment to WPB's Construction Order L-41 that provided for the installation of heating and combustion *control equipment* within certain cost limits without WPB approval was not intended to change restrictions on the purchase and installation of new heating equipment such as furnaces, says WPB.

Order L-79 still covers sales of new furnaces and, except for replacement, requires authorization from WPB before purchase can be made. The requirement has not been changed by the amendment to Order L-41.

◆

Oil for Summer Hot Water

LARGER rations of fuel oil for those who *use oil only for heating water during the summer* were authorized June 27 by the Office of Price Administration.

The amendment to the fuel oil ration order was effective July 1, 1944, and changes the formula for determining rations for hot water in private dwellings in cases where application is made after June 15.

The new formula permits a local War Price and Rationing Board to grant rations up to a maximum of 20 gallons a month for one person, and five additional gallons for each other person in the household. The old formula provided a maximum of two-thirds of that amount.

Rations granted under today's amendment will be for the summer period only. They will not extend beyond September 1, when the new heating year begins. Oil needs for heating water after that date will be included in the total oil ration for the 1944-45 heating year.

(Amendment 13 to Ration Order 11—Fuel Oil—effective July 1, 1944.)

◆

L-41 Insulation

THE exception made from Conservation Order L-41 for insulating buildings with certain materials applies only to the insulation of existing buildings without change in the use of these buildings, the War Production Board states.

The ruling states that the exception does not apply to the use of insulating materials in the original construction of a building, to an alteration to a building, or to a conversion from one purpose or use to another.

For example, if an existing building is being converted from a store to a frozen food locker plant, the cost of the insulating materials installed must be included as part of the cost of conversion subject to the cost limitations of Order L-41 as these materials are being used to convert a store to a locker plant, not to insulate a store.

This ruling is made in Interpretation 7 to Conservation Order L-41. The interpretation was issued May 23, 1944.

◆

Replacement Schedules Abandoned

MODIFICATION of the replacement schedule program was announced June 1.

Replacement schedules now in effect may remain effective until their expiration date, but they are subject to revision consistent with the current Selective Service policies.

Establishments which have been operating under the schedules may apply to the State Director for renewal, but the renewal will be for one additional six month period only, unless the Director of Selective Service determines that a further continuation is warranted. Establishments which have not been operating under replacement schedules are ineligible for replacement schedules.

◆

"Short Order" Casting Price

A NEW alternative method for pricing "short orders" of gray iron castings was announced June 10 by OPA.

A "short order" is an order for a casting where the shipping weight multiplied by the quantity ordered does not exceed 200 pounds.

The new alternative method, effective June 15, 1944, permits a price per pound for short order castings 2½ times the seller's average price per pound for all gray iron sales in 1942.

(Amendment 8 to Maximum Price Regulation No. 244—Gray Iron Castings—effective June 15, 1944.)

◆

MRO Costs Revised

RULES governing the use of the maintenance, repair and operating supplies (MRO) procedure for obtaining minor capital additions have been clarified by the issuance of an amended interpretation.

The MRO procedure may be used to obtain materials and equipment for minor capital additions where the cost of such addition does not exceed $500, excluding the purchaser's cost of labor. This is provided for in CMP Regulation No. 5.

Interpretation No. 11, as amended May 22, 1944, to CMP Regulation No. 5, points out that all labor costs involved *in the manufacture of the material or equipment* must be included in figuring the cost of an addition. On the other hand, the cost of labor used in installation of a minor capital addition need not be in-

(*Continued on page* 107)

MPR-251 Is Up Again —

This impractical order, never widely enforced, can only be a possible future threat. Here is an idea of what is going on.

DO YOU remember Maximum Price Regulation 251? That OPA regulation (AA, Feb. 1943; March, 1943) which required every contractor to price his jobs no higher than the "most comparable job" and to report each job to OPA on a form which was never released officially. It was finally thrown out the window so far as reporting was concerned in April of 1943.

It now seems MPR 251 was never really dead. Worse still, OPA is now preparing a revision of the order (still in draft form) which still imposes a fixed price formula and tightens the provisions for contingencies, but does allow for additional labor costs resulting from authorized increases in labor rates.

MPR 251 is being protested by certain sections of the construction industry. Some associations in our own industry are working quietly to see what they can do to protest. Since our industry, like many others, never did believe MPR 251 could be lived up to and is completely unnecessary by reason of the competitive nature of our business the following letter may be interesting. If you would like to help protest MPR 251 write the editors and we will tell you what to do.

OFFICE OF PRICE ADMINISTRATION
Washington, D. C.

June 5, 1944

Hon. Thad. F. Wasielewski
House of Representatives
Washington, D. C.

My Dear Congressman:

This will acknowledge your personal interest in the communications you have recently received objecting to a proposed revision of the construction regulation, Maximum Price Regulation 251.

This regulation has been in effect since November 5, 1942, and it covers, in addition to electrical contracting, all other branches of the construction industry including plumbing, heating, painting, home improvement, insulation and other fuel conservation services, as well as general contracting. Your constituents' objections have been carefully noted, but inasmuch as we have received similar letters of protest from other Senators and Congressmen, and our replies to them correspond, we are outlining, as concisely as possible, the questions at issue:

1. Maximum Price Regulation 251 was issued October 31, 1942. The proposed revision is not a new effort to bring the construction industry under price control, but it is a relaxation of some of the present requirements following 18 months' experience of price control for the industry under this regulation. It simplifies compliance provisions and it corrects several minor inequities and incorporates a major change for pricing labor, thus affording relief to the construction industry.

2. The most important change which is proposed is in the provision for determining labor costs. On January 26, 1944, the Director of Economic Stabilization sent us a directive to the effect that the regulation recognize lawfully approved wage increases as an element in determining maximum prices. The present regulation requires that labor costs be determined on the basis of rates in effect in the area of installation on July 1, 1942, and that adjustments of maximum prices resulting from wage increases can be made only upon a showing by contractors that they are unable to absorb such increased cost. By the proposed revision the construction industry is relieved of filing adjustment applications in those cases wherein increased wage rates have been authorized or approved by the Wage Adjustment Board, the National War Labor Board, or the Director of Economic Stabilization. Contractors are permitted to price their services as of October 3, 1942, instead of July 1, 1942, and to add to the price so determined, without the formality of applying for approval to the Office of Price Administration, the increase in labor cost. In line with the stabilization program, we do not expect to allow an additional markup on the increased labor cost.

3. The revision imposes no additional burden upon contractors to keep records other than those which they have customarily kept. The reporting provisions were removed in March, 1943, and the requirement for furnishing compliance certificates is now being modified.

4. Considerable stress has been placed upon our press release of March 22, 1943. At that time we gave consideration to the possible future exemption of certain portions of the construction industry. Since then we have found such action impracticable. Repair and maintenance services can not be separated from new construction, since the same classes of materials, labor, and equipment are ordinarily used for both types of construction activity.

5. During the time the proposed revision was being drafted, we continuously consulted with members of the industry. Among those called in was Mr. Laurence W. Davis, general manager of the National Electrical Contractors Association, and as late as April 26, 1944, he indicated to members of our Office that he had no objection to offer. Since then, however, he had forwarded a letter to the members of his association urging them to object, and we believe that the letters now being received by Members of Congress are the result of Mr. Davis' objection.

6. We feel that the revised regulation presents a practical solution of the problems peculiar to the construction industry which have arisen since the effective date of the regulation. It offers substantial relief to members of the construction industry including electrical contractors, imposes no additional burden or cost upon either contractors or the public, and is intended to improve existing maximum price control for this industry.

I trust the above information will clarify our position in the matter.

Very truly yours,
/s/ James L. Harrison
Congressional Liaison Officer, OPA
Room 129, House Office Building

SHEET METAL CONTRACTORS NATIONAL ASSN. is circulating to members correspondence from the National Electrical Contractors Association, indicating that MPR-251 is once more being pushed by OPA. Your protest to your Congressman is urgently suggested.

Dear Member:

We are again faced with an effort on the part of OPA to bring the construction industry under their regulation through a "Revised MPR-251." The proposed wording of the revised draft is a simplification of the original regulation; it provides for automatic increase of wage "ceilings" over the base period by adding the exact amount of any approved wage increase, but **without markup**; and it simplifies the form of "certificate of compliance" required to be given each purchaser at time of final settlement, but would require such certificate on every job and also require the contractor "before entering into a contract or making a sale subject thereto" to notify the purchaser of the existence of this regulation and make it available for his examination.

Attached hereto is a copy of protest (briefed by AA) which we have filed with Chester Bowles, Administrator of OPA, against this proposed "Revised MPR-251." The attached letter covers the basic objection to this proposed "Revised MPR-251" against which we are protesting.

The Authority of OPA to regulate industry originates in the Congress, and the extent to which such regulation may be carried may also be determined by the Congress. If you feel that this proposed "revised MPR-251" would be a hardship and detrimental to your business and to public interest, we advise that you immediately write or wire your Senators and Congressmen protesting this attempt to impose such regulation upon the construction industry, which has shown over the past two and a half years since Pearl Harbor that further regulations is unnecessary.

Yours very truly,
Laurence W. Davis,
General Manager,

National Electrical Contractors Association.
May 3, 1944.

Hon. Chester Bowles, Administrator
Office of Price Administration
Old Census Office Bldg.
Washington, D. C.

PROTEST OF THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION AGAINST A PROPOSED REVISED MAXIMUM PRICE REGULATION NO. 251

Sir:

As General Manager of the National Electrical Contractors Association, duly authorized by its Executive Committee to do so, and after taking the advice of its General Counsel, this protest is hereby filed with you. I am instructed to, and I do hereby incorporate as a part of this protest, the protests which were filed more than a year ago by this Association with your predecessor against Maximum Price Regulation 251, which he revoked in part in January 1943, and announced by public release OPA-2038 on March 22, 1943, and later by promises to officials of this Association, that he would revoke in its entirety after some amendments had been worked out to other Regulations pertaining to repair work.

It is now apparent that in disregard of the said promise made by your predecessor, upon which this Association acted in good faith in dismissing its appeal to the courts, your office is now attempting to revise and re-issue the said MPR-251.

On Wednesday of last week we were handed a draft of a "Revised MPR-251," containing the statement that "so far as practicable the Administrator has consulted with representative members of the industry to be affected by this Regulation." To our knowledge no members of the electrical construction industry were consulted in the preparation of this "Revised MPR-251."

Our executives now having seen and read this proposed "Revised MPR-251," I am instructed to advise you that the National Electrical Contractors Association is as strenuously opposed to it as they were to the preceding MPR-251 . . . and that if this "Revised MPR-251" should be placed in effect, this Association and its membership will contest it in every legal and proper measure.

There is no basis in either the Constitution of the United States nor in the Emergency Price Control Act for such a regulation applicable to the construction industry. Furthermore, the experience of the country, with no such regulation enforced since December 7, 1941, shows that no such regulation is needed. Through the power to negotiate contracts, and through the power of renegotiation, plus the power of taxation—all of which have been and are being exercised by the United States Government—there is no possibility of members of the construction industry overcharging the United States. Moreover, the ceiling price of electrical supplies is fixed by the OPA and the rates of wages are fixed by the WAR LABOR BOARD and the Wage Adjustment Board.

All that the electrical contractor has left as a competitive factor is his skill, experience and ability to get work done, and the price of that is fixed by the highly competitive market. Due to the special requirements and uncontrollable factors involved in each and every job performed by the electrical construction contractors, the cost of doing the work upon every job likewise varies. There is, and can be, no predetermined uniform "ceiling" or standard prices for electrical construction on a contract basis which may be used intelligently or safely to determine the contract amount for work required for specially designed construction in accordance with specific drawings and specifications.

There is a large element of risk or gamble in every lump sum construction contract which the contractor must assume. In every estimate for such contracts special allowances must be made for unknown and unforeseen conditions which usually arise. No two jobs are alike, and the element of risk can only be determined by the contractor's experience and judgment, upon which he must risk his chances of profit or loss. Construction contracts carry no provision for recovery of losses. The requirement in the "Revised MPR-251" that the contractor's margin "must be supported by records or other competent evidence of transactions by the seller . . . of comparable transactions . . . occurring during the base period," is impracticable and unworkable, and lays the contractor open to the challenge of any OPA "representative" who may dispute the contractor's judgment.

The proposed "Revised MPR-251" would compel changes in existing practices and methods of the construction industry. It would require contractors to keep records concerning each sale subject to the Regulation and "a full statement of the method by which the maximum price was calculated, including reference to the appropriate pricing section of the Regulation. This Regulation would make every contractor subject to the individual judgment of any OPA "representative" who could examine his records at any time, and could make the contractor "subject to criminal penalties, civil enforcement actions, suits for treble damages, and proceedings for the revocation of licenses," upon such individual judgment of an OPA representative—or subject the contractor to the necessity of defending himself in the courts.

The provisions of this revised Regulation could not benefit the public or reduce the cost of living, but could only increase the cost of OPA administration and absorb vitally needed manpower both within the OPA and within the organizations of contractors. Not only would it deplete manpower now so essential to the war effort, but it would increase the contractors' costs and add to the burden of taxation on the public.

Yours very truly,
Laurence W. Davis,
General Manager, N.E.C. Assoc.

On Our Industry's Front

No Class B Stokers

SAYS Stoker Manufacturers Ass'n: "Judging from the 'quality' of many rumors floating around the industry—particularly among dealers—one would think that Class B stokers are to be available 'within the next two or three weeks.' We know of no statements made by any authoritative agency—either in the Government or in the Industry—which provides any foundation for these rumors. As far as we know, the Task Committee and the Industry Advisory Committee have not been called into conference as to the possibility of the early resumption of Class B stoker manufacturing.

"The Stoker Industry's Task Committee has presented complete and very detailed information to the War Production Board on Class B stoker production. These reports have been very carefully studied by many branches and officials within WPB. We have every reason to believe that if and when WPB and other Government agencies are in accord as to the necessity for the resumption of the manufacture of Class B stokers that the Task Committee and the Industry Advisory Committee will be consulted and every phase of the problem worked out as carefully and as fast as possible, so that in the event of the resumption of Class B manufacturing the fullest possible benefit to the war program and civilian economy will accrue."

◆

Some Copper Items Freed

FREEING of frozen inventories of certain listed copper-containing items of heating equipment and building material is now permitted through Amendment of Supplementary Conservation Order M-9-c-4 which permits use of *inventories of finished items* listed in Paragraph (a) (5) of the order, previously frozen by its restrictions. Among the items listed are: Cornices; drip pans; flashings and gutter liners; gravel stop and snow guards; gutters, leaders, downspouts, expansion joints and accessories; louvres and marquees; mouldings and trim; ornamental metal work; ventilators and skylights.

Another change allows use of copper and copper base alloy building material, pipe or tubing when necessary to replace similar items in or on a building, from stocks now in possession of the building owner. Previously, owners were permitted to use only material in their possession on June 23, 1943, in amounts not to exceed 25 pounds for each specific repair.

◆

Need Class B Oil Burners

RELAXATION of Limitation Order L-74 (Oil Burners) to permit production of a limited number of Class B (residential) oil burners to replace old equipment that is badly worn or damaged beyond repair has been recommended by the Oil Burner Industry Advisory Committee.

The committee reported to WPB that no production of domestic oil burning equipment has been permitted, except on rated orders, for more than two years, and present stocks of Class B oil burners are now far below minimum inventory levels. Also, inability of dealers to get necessary replacement oil burners for their customers has put an undue burden on the public and the industry to keep the installed equipment operating at a sufficiently high level of efficiency to maintain a healthful condition in users' homes on their rationed allotment of fuel oil. Minimum needs for replacement purposes can be met without interference with war work in manufacturers' plants, and with a minimum of skilled labor, the report said.

A study of critical components required for maintenance and repair of oil burners reveals that the motor situation is steadily growing worse and added that orders for new motors with high ratings have a time lag on delivery from six to 15 months.

◆

AC Repair Parts Short

INVENTORIES of repair parts for refrigeration and air conditioning equipment are dangerously low at present, the General Refrigeration and Air Conditioning Industry Advisory Committee reported at a recent meeting held in Washington.

To correct this situation, the committee recommended (1) that WPB make every effort possible to expedite processing of Form WPB 547 (formerly PD-1X), (2) that a higher rating be made available to the industry for obtaining production materials with which to make the necessary repair parts, (3) that inventory provisions of Order L-63, distributors' inventory limitation order, be relaxed to take care of seasonal demands for repair parts for refrigeration and air conditioning equipment, and (4) that all other possible steps be taken to speed deliveries of repair parts to replenish diminishing inventories.

The committee received a report from WPB officials on the current availability of Freon 12. The supply of this item continues to be short.

◆

Prices for "Seconds" Sheets

A SIMPLER pricing method by which warehousemen can compute their maximum delivered prices for secondary or rejected flat rolled and semi-finished iron and steel products became effective June 17, 1944, and revises Appendix F completely and extends to secondary or rejected flat rolled and semi-finished iron and steel products the "zone plan" already adopted for pricing of prime quality heavy line products.

The country is divided into 17 zones, each of which corresponds generally to the usual market area of warehouses in the zone. The maximum delivered price for destinations within each zone is made up of the mill basing point price, freight, spread and extras. A "price component index" lists various products covered and refers to tables which the warehouseman uses to ascertain the value of the following factors which make up the maximum delivered price: price at basing point, freight, spread, quantity differentials,

quality extras, size differentials, cutting extras and miscellaneous extras.

Another feature of the new Appendix F is the extension of the definition of "secondary or rejected iron or steel products" to include products which actually are of less than prime quality at the time of purchase or sale as well as products which were purchased by, or invoiced to, the seller as other than prime quality. This broader coverage affords greater protection to the purchaser and prevents evasion through false invoicing. The list of products covered now includes all coated sheets, except tin plate and short ternes. Previously, only galvanized, galvannealed and long terne sheets were covered.

◆

Copper Tubing for Repair

UNDER Controlled Materials Plan Regulation No. 9A repairmen may procure only three types of copper or copper base alloy tubing or pipe from brass mills or brass mill warehouses.

The three types of copper tubing which repairmen may obtain from brass mills or brass mill warehouses are:

(1) Seamless copper tubing soft in coils or in straight lengths of an O.D. (outside dimension), gauge and type commonly sold as automotive tubing;

(2) Seamless copper tubing soft in coils in gauges .032" and .035" and of an O.D. and type commonly sold as refrigeration tubing, and

(3) Seamless copper tubing soft in coils ½" or ⅜" O.D. x .049" gauge for oil burner service.

Orders which bear the allotment Symbol V-3 which is assigned to repairmen by CMP Regulation No. 9A, may not be accepted by any mill or warehouse unless they are for one or more of these three types of pipe or tubing.

Direction No. 1 to CMP Regulation No. 9A, which became effective June 30, 1944, imposes the limit on sales of copper tubing between distributors. It also points out that when a distributor buys from another distributor for the purpose of reselling to a repairman, his order must so state.

Also, a quarterly limit of 2,000 pounds of copper tubing has been imposed on amounts of this material which one distributor may sell to another distributor.

No distributor may purchase more copper tubing under the provisions of Direction No. 1, than 6,000 pounds a quarter, unless he is specifically authorized to do so by WPB. This limit applies to distributors regardless of whether they obtain their tubing from other distirbutors or from mills or producers.

◆

Remodeling Procedure Change

FHA announces revised regulations, effective July 1, on property improvement loans insured with the Federal Housing Administration against overpricing and other unethical practices on the part of some contractors and dealers.

"On and after July 1, 1944, lending institutions will be required to investigate all dealers from whom they purchase Title I paper, and to satisfy themselves before accepting such paper that the originating dealer is reliable, financially responsible and qualified to perform satisfactorily the work to be financed and to extend proper service to the customer."

The new provision will, says FHA, deter the irresponsible dealer who misrepresents a product, overprices a transaction, engages in other sales practices which the vast majority of manufacturers, dealers and contractors regard as unethical and against the public interest. Moreover, lenders will be cautioned that they are to hold the dealers with whom they transact Title I business, strictly accountable for the acts of their salesmen.

◆

Employment Shifts

WAR industries are losing workers at an average of 100,000 a month, and jobs in non-war activities are declining at the rate of almost 50,000 a month. The Commerce Department observes that manpower shortages persist in some individual plants "but the general trend is downward."

◆

Galvanized Ware

THE sheet steel situation continues to be serious, and galvanized ware manufacturers will encounter increasing difficulty in obtaining galvanized sheets during the rest of 1944. The output of practically every rolling mill in the country is completely booked for the third quarter of this year, and of some mills for the fourth quarter as well. Some cancellation of orders will occur, of course, and galvanized ware manufacturers may be able to take advantage of this to place their orders.

The manpower situation in the industry has not changed appreciably in the last few weeks. It is difficult to obtain either the type or quantity of workers needed. Men are being replaced by women wherever possible, and in some plants workers are being obtained through the War Relocation Authority. IAC members expect the recently revised draft regulations to help their manpower situation.

IAC members reiterated their previous recommendation that restrictions on sizes of galvanized ware be liberalized. Permission to make a wider variety of sizes, they said, would allow manufacturers to use more of the equipment on hand in the plants. This would result in more efficient utilization of manpower as well as of machinery.

◆

Asphalt Roofing

CHIEF topics discussed at the meeting of the Asphalt Roofing Industry Advisory Committee were the proposed changes in Order L-228 (asphalt and tarred roofing products and asphalt shingles); raw materials problems; and civilian requirements.

The Committee recommended that finished weight of raw back 17" or 19" salvage roofing be maintained at 55 lbs.; that finished weight for the back and salvage coated sheet be permitted to range between 55 lbs. and 61 lbs. with the usual 4 per cent tolerance; and that each manufacturer be permitted to elect which single weight within this range he will produce.

An official interpretation of "finished weight" as the term is used in Order L-228, stated, in substance, that a manufacturer must use the finished weight specified for a particular product as his standard in the manufacture of that product. The 4 per cent

(*Continued on page* 109)

The Furnace Situation on July 1

Briefed address of Morgan M. Johnston, Chief, Warm Air Equipment Section, Plumbing and Heating Division, WPB, before National Warm Air Heating & Air Conditioning Ass'n, June 7.

AT THE beginning of 1942, Military production required enormous quantities of iron and steel to make guns, tanks, ships and planes. Since winning the war was our main objective, there was no question as to what products should get the green light and so a limitation order was issued to curtail the civilian item in favor of direct war goods. This limitation order, L-22, restricted furnace production but still permitted a production rate of approximately 62% of normal output.

During the latter part of 1942, while Order L-22 was still in effect, a concentration of production limitation was also considered for the furnace industry by the Concentration Committee. However, this plan was dropped in the early part of 1943 because the Plumbing and Heating Division proved that available facilities were necessary to manufacture an adequate supply of furnaces to meet essential Military, war housing and civilian replacement needs.

The end of 1942 saw the expiration of the quotas in Order L-22 and the birth of Order L-22-a which stopped steel furnace manufacture, except for Military use. Conditions made it possible to revoke this Limitation Order in July 1943 and to resume steel furnace production under Order L-22 as amended.

Along with the Controlled Materials Plan we have internal operating programs known as Program Decisions. The furnace industry is operating under an approved program called Program Decision Number 10. A brief description of operation under this program might serve to create a better understanding of its relation to the amounts of allotted materials. A program decision is a compilation of the various Claimant Agency requirements which collectively determine the rate of production. The principal Claimants for furnaces are Army, Navy, Maritime, National Housing Agency and Office of Civilian Requirements. Controlled materials are made available to meet these requirements and such materials are allotted to manufacturers in amounts necessary to produce only the number and kind of furnaces required by the program. It is obvious, since the Claimants civilian requirements are based upon essential need rather than public demand, that only material to meet essential requirements would be available for allotment. Hence, the restriction on production.

So much for the historical picture.

Furnace Production 1940-1944

Since it is the policy of War Production Board to make production figures available to industry, I now want to give you those figures that have been compiled from producers monthly reports on Forms WPB-3316. At the present time (June 7, 1944) only complete figures have been compiled for the first quarter of 1944. Before presenting the current report, however, I would like to refer you to the production of previous years for comparative purposes.

In 1940 the furnace industry produced approximately 531,000 furnaces of all fuel types—solid, liquid and gaseous. Accurate figures for the years of 1941 and 1942 are not available but an estimate would indicate 568,000 furnaces in 1941 and somewhat in excess of 300,000 in 1942.

Production figures for 1943, compiled from an eleven months' report by industry with one month estimated, showed 198,000 furnaces of all kinds were produced with very few oil and gas types. For about two years the use of oil and gas as space heating fuel for new installations has been almost totally stopped because of wartime demand for those fuels. Some relaxation is taking place and gas utilities with excess capacity have been given the privilege of accepting additional house heating loads. Oil is still very critical and may remain so for an indefinite period. I want to point out, however, that the restrictions of the furnace limitation order permit the manufacture of all fuel types of furnaces in quantities required to satisfy essential requirements as determined by the interested Claimant Agencies.

The number of furnaces produced in 1943 together with the excellent job done by the manufacturer, jobber and dealer in allocating distribution apparently satisfied essential civilian needs. I do not, however, want to infer that more furnaces could not have been sold, because there were approximately 75,000 unfilled orders carried over from the year's end by manufacturers. The knowledge of this condition may perhaps be interesting to the distributive part of the industry and indicates to some extent the problem that manufacturers have had in trying to keep everybody reasonably satisfied with respect to deliveries.

During the first quarter of 1944, 74,000 furnaces were produced of which 65,000 were shipped. If the same rate of production continues throughout a year's period, a total of 296,000 furnaces will be produced for all Military, housing and civilian uses. Considering that solid fuel furnace production, which represents the only real demand today, totalled 65,000 units during the first quarter, the industry is operating at about 80% of the base year 1940.

There isn't any appreciable inventory of solid fuel burning furnaces. A few scattered stocks may exist but they are heavily off-set by unfilled orders which number slightly in excess of 60,000. Those unfilled orders do not necessarily reflect essential need but are mixed with public demand.

I am able today to give you requirements of the National Housing Agency and the Office of Civilian Requirements *for the third quarter.* The National Housing Agency has programmed approximately 18,-

(*Continued on page* 112)

RESIDENTIAL AIR CONDITIONING

SECTION

DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING

While York Heat engineers were occupied in perfecting post-war models, the front office was just as busy rounding out plans for selling them.

York Heat sees eye to eye with the distributor, understands his problems, believes in, and practices, thorough merchandising cooperation. Every York Heat distributor is backed by a flexible plan of cooperative advertising, tailor-made to the requirements of his own locality. This in addition to resultful national advertising by York Heat. The complete York Heat line, comprising domestic, industrial, and commercial units, will be carried from factory to consumer by a streamlined financing plan practically eliminating capital investment by the distributor.

With York Heat ready to go into production of the most complete line of oil-burning equipment ever known in the industry, a York Heat franchise is an ideal set-up for assured profits. If we are not already represented in your community, the territory may be available to you. Look into it!

BACK A WINNER!

YORK HEAT

***Division of* YORK-SHIPLEY, Inc., York, Pa.**

ARMY E NAVY

YORK HEAT, Division of
YORK-SHIPLEY, Inc., YORK, PA.

Gentlemen:
A York Heat franchise looks good to me. Please send me further information concerning it.

Name.....

Address.....

7A

Member Oil Heat Institute

FURNACE BLOWER PRIORITY REGULATIONS

Condensed—In Effect June 10, 1944

This tabulation was developed from a similar outline previously prepared by Lou Reining, Chicago district representative for The Brundage Co., Kalamazoo, Mich., as a guide for furnace dealers. It was recently adopted by the blower manufacturers' conference to promote uniform opinions and expressions concerning prevailing blower regulations among manufacturers, distributors and dealers in this industry.

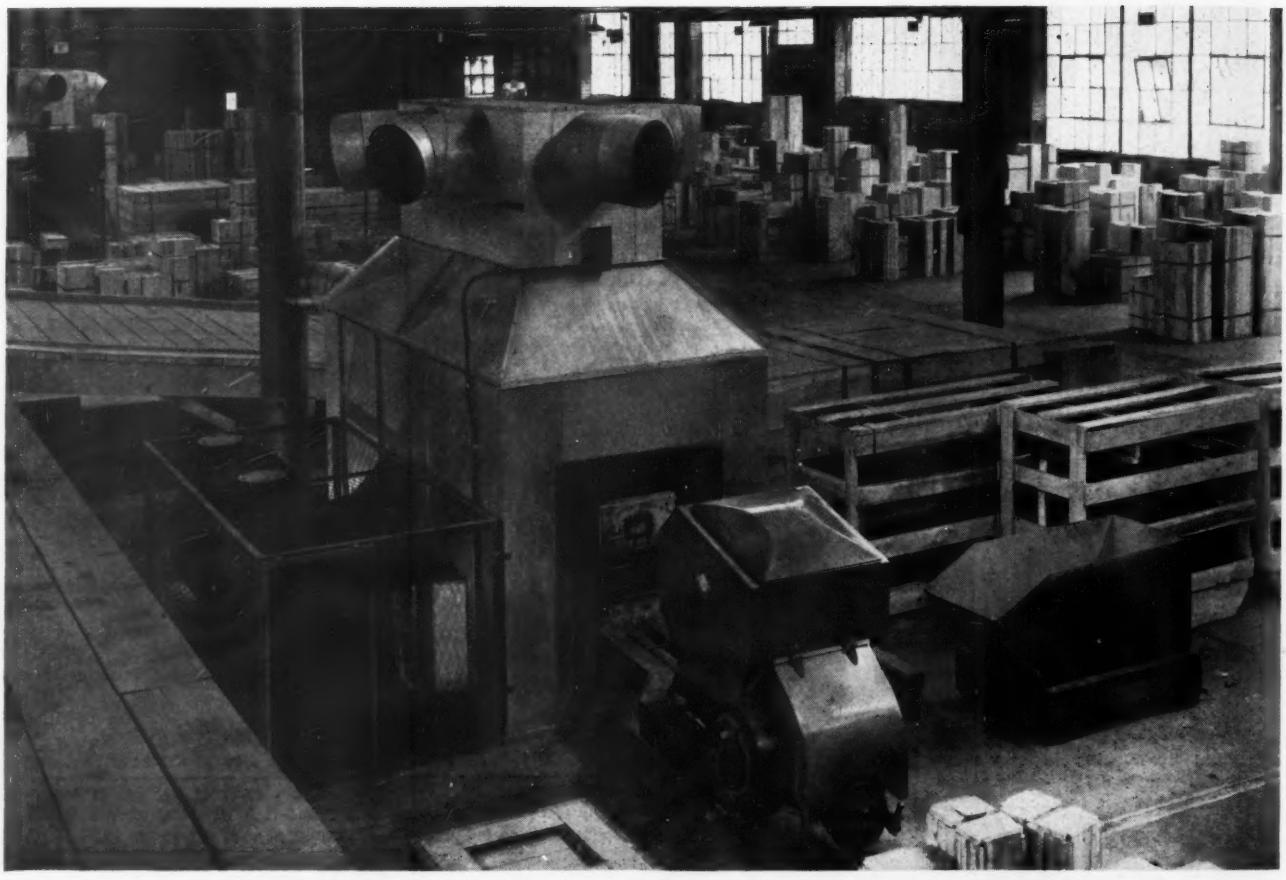
(This outline of regulations has been passed upon by the 6th Regional WPB Office, Chicago, Ill.)

Type of Installation	Regulation Applying	Priority Rating	To permit or facilitate installations of Furnace Blowers—
Original installation in **owner** occupied, 1-family dwelling—total cost of installation not to exceed $200.00*	L-123	AA-5	Blowers WITH MOTORS—Homeowner applies on form WPB-541 (formerly PD-1A) to local WPB office for priority assistance. Applicant should give all reasons for installation, viz: Fuel savings up to 25%; Overcome defects or inadequacy of existing gravity furnace; Difficulty in heating upstairs rooms, etc. Upon WPB approval, homeowner extends AA-5 rating to dealer, dealer to his supplier.
	L-79	AA-3	Blowers WITHOUT MOTORS—When blower is **not** for replacement, homeowner may apply on form WPB-1319 (instead of WPB-541) for priority assistance; procedure same as above, except rating will be AA-3 and only blowers 16" and smaller and without motors can be furnished under L-79. See also "Replacements" below.
Original installation in **tenant** occupied homes and 2-flat buildings—total cost of installation not to exceed $200.00*	CMP-5	AA-5	No application for priority assistance necessary. The dealer may automatically extend an AA-5 MRO rating to his supplier. Applies to blowers in all sizes with electric motors.
Original installation in either owner or tenant occupied homes if total cost of installation exceeds $200.00*	L-41	AA-5	Homeowner applies on form WPB-2896 to local **FHA** office for priority assistance. Upon approval, the homeowner extends the rating to his dealer, the dealer to his supplier.
Factories, stores, shops and other commercial establishments — cost (exclusive of labor) not to exceed $500.00	CMP-5	AA-1 AA-2 or AA-5	The dealer may automatically extend an AA-1 rating for maintenance or repair of facilities required for producing any product or conducting any business listed in Schedule I of **regulation CMP-5,** AA-2 rating for those listed in Schedule II, and AA-5 for those NOT listed in either schedule of this regulation.
Government (Federal, State, County or Municipal) Institutions, hospitals, schools, colleges, churches, libraries, welfare establishments—cost (exclusive of labor) not to exceed $100.00	CMP-5A	AA-1 AA-2 or AA-5	The same preference ratings may be applied for the respective schedules in **regulation CMP-5A** covering activities and services listed in this order. For example, hospitals are included in Schedule I of CMP-5A, affording an AA-1 rating; Government Institutions, Schools and Colleges are listed in Schedule II for AA-2 rating, while AA-5 rating automatically applies to churches, libraries, welfare establishments, etc. MRO certifications.
Housing Projects	....	....	Where specifications call for furnace blowers, the over-all project rating may be extended by the contractor to his supplier.
Replacements of worn out or non-repairable blowers in homes, shops, etc.	L-79	AA-3	Dealer may automatically extend AA-3 rating to his supplier, but blowers thus ordered **CANNOT BE FURNISHED WITH MOTORS** by either manufacturers, jobbers or dealers. If old motor, as well as old blower, must be replaced, the dealer may order motor under CMP-9A, making replacement on exchange basis, as per order L-123. Jobbers and Dealers may apply this rating to purchase a 60-day supply of furnace blowers, 16" and smaller, WITHOUT motors. Maximum size blower allowable under this order is 16". Also see Note 1 below.
Repair Parts for Furnace Blowers	CMP-9A	AA-3	Permits dealers to extend AA-3 rating to supplier for motors (for repair jobs only), fan wheels, bearings, housings, etc.

*If other new construction has been started since Jan. 1, 1944, this $200.00 must be reduced by the cost of such other work; $200.00 is the total of ALL new construction projects that can be started in the same year without special authorization under WPB order L-41 on any residential building of less than 6 apartments.

NOTE 1—Blowers bought under order L-79 (without motors) for 60-day supply may also be installed on jobs authorized by WPB under regulations L-123, L-41, CMP-5 and CMP-5A. The electric motors required to complete installations under the latter four regulations may be ordered by the contractor for each such installation with the preference ratings provided in those regulations.

NOTE 2—Item No. 7 in list A of L-79, namely, "Forced Draft Blowers for warm air, hot water and low pressure steam systems," refers to mechanical **draft** blowers used in connection with boilers and furnaces burning very small coal requiring supplemental draft. These **draft** blowers should not be confused with furnace blowers designed for forced air circulation in warm air heating systems.



Two of the four 650,000 Btu furnaces with stokers and blowers, special bonnet and stubs. Note large expanse of glass and concrete floor; also numerous packages for shipment. Specification of 50 degrees is supplied in normal winter weather despite undersized equipment.

Heating Results in an Under-Capacity System

FOR the shipping warehouse of a customer, the Meyer Heating & Sheet Metal Division of the Meyer Furnace Company, Peoria, Illinois, installed the system shown in the drawing and photograph and produced some interesting results.

The building is monitor type, 127 feet wide by 280 feet long, brick and glass side walls, mostly glass monitor sides, 3-inch Gypsum slab roofs, 31 feet high at the ridge, 15 feet 6 inches high at the side walls. According to the calculations of Ross Wallis engineer of the Meyer Company, the heat loss figured approximately 4,030,000 Btu at zero outside temperature.

The customer specified that a temperature of 50 degrees be maintained at the floor in zero weather on the basis that 50 degrees should be warm enough for the packaged goods stored in the building and for the comfort of the workmen who would do fairly heavy labor. Originally, a small side room was intended for clerical work, but this was eliminated and a small space was partitioned off at one end of the raised dock. No separate heat run was provided for this office, but one stub branch on the nearest furnace was pointed at the office—the result has been pretty satisfactory comfort in the office during most weather probably due largely to the fact that the floor is raised a few feet above the main floor of the building.

The original plan called for six furnaces, placed along the center line of the building. Each furnace was and is stoker-fired. But the customer decided to try four furnaces—if four gave satisfactory results, some money and critical materials would be saved; if the four would not satisfy two more could be added. Each furnace is a Weir, steel, rated at 650,000 Btu under stoker firing. To each furnace an unhoused blower (see photograph) was attached at the side; capacity of the blower 10,000 cfm. A 100-pound per hour Winkler stoker, of the hopper type, supplies fuel.

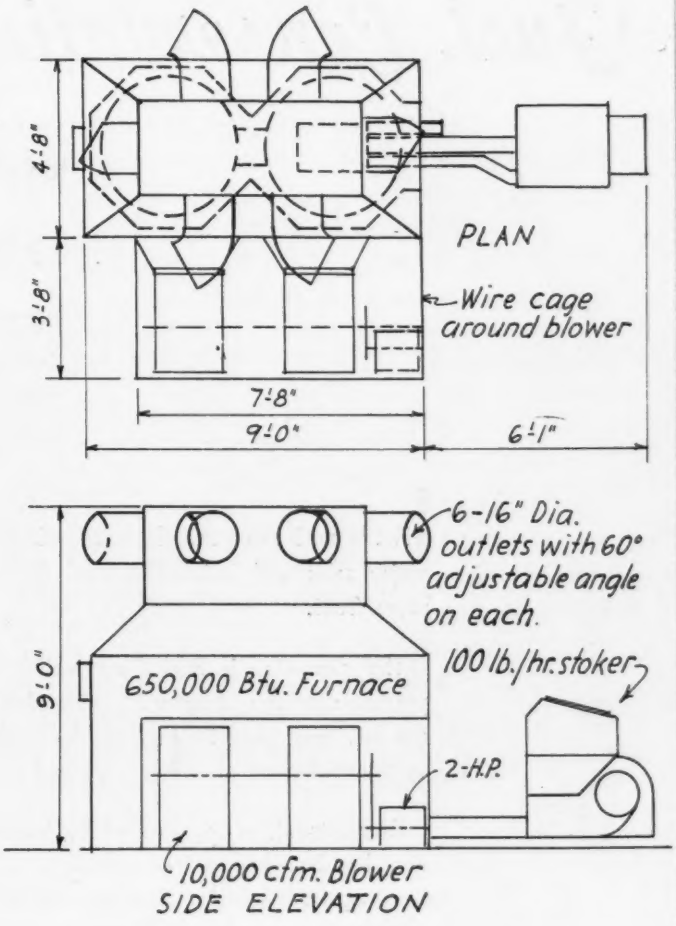
Each stoker is controlled by a thermostat located at a height of about 8 feet above the floor on the column nearest its respective furnace. The thermostat has the standard range of 55°-85°. The high location puts it up out of reach of the curious and also permits maintaining the desired 50° at the floor even though the lowest possible setting on the thermostat is 55°.

By the original recommendations, six furnaces rated 650,000 Btu each would supply a total of 3,900,000 Btu —just about the calculated heat loss. The four furnaces actually installed supply 2,600,000 Btu which is definitely short of the calculated requirement. Accordingly, the results obtained are of interest.

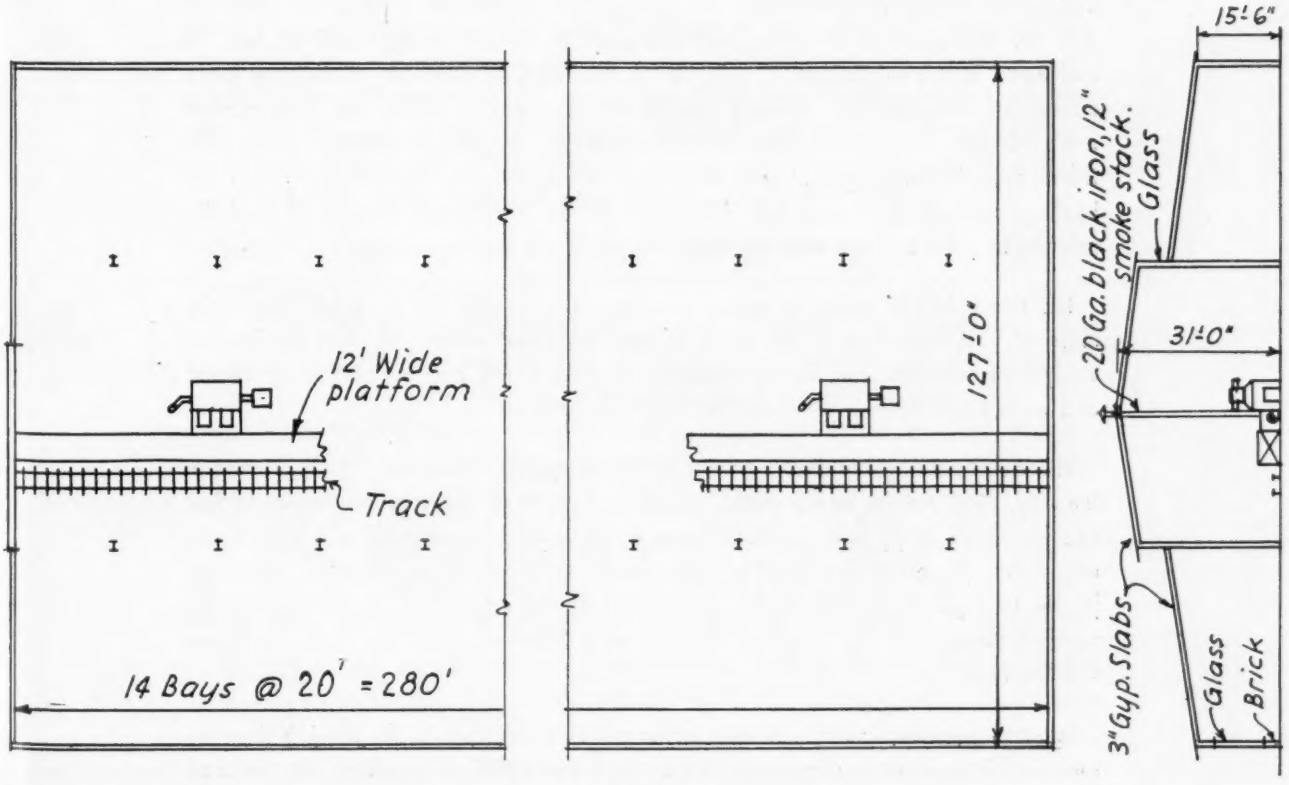
As operated last winter, the register temperature is

about 125 degrees. The fan starts at 125 degrees and stops at 100 degrees, so it is evident that the stoker and the furnace can maintain 125 degrees at 10,000 cfm. There is one very large door at each end—freight cars enter at one; the other door is for trucks, incoming freight, etc. So long as the doors are closed for most of the day, the four furnaces maintain the required 50 degrees; the stokers and the fans run and stop at fairly frequent cycles, indicating that the four furnaces are just about equal to the heat loss. But if the doors are open for protracted periods the inside temperature drops below 50 degrees in zero weather and it requires several hours for temperature to come back up to 50 degrees. Further, the customer tried to reduce the stoker to low speed feed of 35 pounds per hour over weekends to avoid stoker attention—the result has been temperatures below 50 degrees on Monday morning and several hours to a full day required to bring the temperature up to 50 degrees.

Several conclusions are to be drawn from these results. First, the four furnaces probably are right at their capacity limit for ordinary winter weather and probably under sized for protracted zero weather. Second, the furnaces-blowers-stokers may be producing more than the rated capacity when operating at full coal feed continually. Third, there may have been over-calculation of the heat loss, or more than usual attention to keeping doors closed has reduced infiltration. Fourth, in so large a building, once the large expanse of concrete floor, the walls and freight stored gets cold the capacity of the two furnaces not installed should be available to raise temperatures quickly—the four furnaces can maintain the load, but do not have capacity for quick pickup. Fifth, it may be that stub branches discharging 9 feet above the floor and directing the air stream downward toward the floor can produce a "blanket" of warm air near the floor without dissipating the warm air into the monitor 30 feet up. Temperature readings in the monitor in this building show approximately 70 degrees when the floor shows 50.



Above—Specifications of large furnace with baffling for fan circulation and special bonnet. Below—Floor plan of building showing furnace locations. Plan and elevation show dimensions of space heated and building construction.



Fuel Conservation —

Washington Has Launched a Nationwide Service Heating Plants to Insure Three A A Studies of Readers'

IN the next three months, warm air heating contractors will be asked to carry the major sales and installation load in one of the most essential campaigns of the home front.

The campaign is Fuel Conservation. It is essential because the nation faces a possible shortage of some 38 million tons of coal. Since our manufacturers must have the fuel they need to produce the implements of war, it must be home owners and commercial users who bear the brunt of saving fuel.

Government, as represented by some nine agencies concerned with fuel conservation, has launched a tremendous program of user education. Briefly, here is what these agencies will do. Two series of advertisements will be sent to some 1,800 daily newspapers—one series will stress "order your coal early" and the other "winterize your house and furnace." Local furnace, coal, hardware, insulation dealers will be urged to buy space to tie in with the advertisements the newspapers will run over its own name. Three ads will be sent to "Shopping News" newspapers which have a circulation of some 12 million readers. A newsreel trailer will be supplied theaters and a film "Prepare for Winter" will be shown in 14,000 theaters in the week of July 20. There will be 43 radio programs over all networks in the week of June 12 and again in the weeks July 17 and 24. In the week of June 26, 45 national radio advertisers will give their network time on 831 broadcasts. There has been printed some 500,000 20x28 three color posters featuring "Prepare for Winter" to be distributed to industrial plants and 200,000 of these will be distributed through the heating controls and insulation industries. A 6x9 stuffer has been prepared for printers to print and sell with customers' imprint.

But this publicity program—comprehensive as it is—can do no more than make users of coal conscious of the need to save fuel next winter. It must be heating equipment installers who explain how fuel can be saved and install the equipment and service the heating plants so that fuel can be saved.

The warm air heating industry did a similar campaign last winter. As suggested in the July, 1943 Artisan in our study "Check to Save Fuel" the only way by which fuel can be saved is (1) have a clean furnace, (2) install the controls which eliminate over-firing, (3) adjust the heating plant to obtain maximum combustion efficiency, (4) be sure you have the proper chimney draft, (5) adjust the air distribution for comfort throughout the structure, (6) stop all unnecessary heat loss from the house and the furnace.

In some ways our industry is in a better position this year to do the job than we were in 1943. In some other ways we are in a more difficult position. On the bad

Program of User Education. Our Job is to Maximum Heating Efficiency. Following are Service for Controls, Stokers, Oil Burners

side we are suffering from a more acute shortage of manpower. Also, there are more furnaces needing major repairs and more furnaces calling for service than was the case in 1943. But in spite of these difficulties this industry will do its best to make the program a success.

On the good side we will have this year control equipment which we know will aid materially to save fuel. As announced in the June issue materials have been allocated for production in the third and fourth quarters of control instruments for 950,000 heating plants. But these hundreds of thousands of controls will not save fuel so long as they lie in the manufacturers, jobbers or dealers stock bins. These controls will save fuel only when they are installed on fuel users heating plants. Selling and installing them is our job.

The way has been cleared for the production and sale. The home owner will not have to produce any priority or any permit to buy these controls; the dealer and the jobber will not be asked for priority ratings to obtain these instruments.

It should be the aim of every warm air installer to analyze his problem and make plans to do his part. For example, if we get 42,000 limit controls (to be added to existing thermostat-damper motor sets) and assuming that warm air furnaces will take at least half these limit controls leaving the balance to be installed on steam or hot water boilers, our dealers must install about 3,500 limit controls each month until 1945. On the same basis, 300,000 thermostat-limit control-damper motor sets calls for the sale of about 23,000 sets a month this year. And 280,000 barometric dampers requires the sale of about 22,000 dampers each month until 1945.

This is not an impossible task for 5,000 American Artisan furnace dealer subscribers if each dealer will make a particular point to sell his share each week.

To service the hundreds of thousands of heating plants which should be put in first class condition before the heating season starts is a much tougher problem. We will have—we anticipate—at least 150,000 replacement furnaces in 1944. There should be about 100,000 furnaces available for use between July 1 and December 31. If each dealer spreads these judiciously and if each dealer tries to repair every possible furnace we will get by.

To schedule the necessary inspection, cleaning, adjustment of several million warm air furnaces which should be serviced will tax our management abilities, but we seem to have done a pretty satisfactory job last year and should be able to repeat this year.

This can be our contribution to winning the war. We repeat—the task cannot be accomplished by slogans or publicity—it must be (as it was last year) a "down-in-the basement" sales and installation and service program which only warm air heating installers can do.

WARM air heating dealers, for many years, have been telling home owners that the surest way to save fuel is to put the heating plant under the direction of automatic controls. Controls, we know, make good firemen out of poor ones; controls eliminate temperature over-runs and run-away combustion—the twin gremlins of fuel conservation. Upon the very comprehensive and detailed report showing how fuel is saved by automatic controls, prepared by Fuel Conservation Council for War, Automatic Controls Industry, WPB has now allocated materials (AA, June, page 45) for the production in the third and fourth quarters of control instruments for 950,000 heating plants. These controls—despite Washington's huge publicity program (see page 58) will not save fuel until warm air heating dealers install the controls on users' furnaces. Installing these controls is our contribution to Fuel Conservation (see page 58). That warm air heating dealers are the key to control sales and installation, is vividly shown in the tabulation below which explains how typical AA readers charge for control service; where they get instruments repaired; how much is paid electricians for installation; how much of a stock we carry. Note particularly how most installations are made by our own men, who also service. And note that almost every warm air installer is also servicing controls. If Washington and our manufacturers deliver, we will have the controls this fall and winter to directly advance fuel conservation—let's accept the job as our contribution to the war effort.

CONTROLS

State and City	Do You Service Controls?	Do You Offer a Special Flat Sum Service? How Much?	Do You Charge by the Hour? How Much?	Who Repairs Your Control Instruments?	Who Installs Your New Control Systems? (Note 1-C)	How Much Does Electrician Charge You to Install?—(In Dollars): Thermostat and Damper Motor	Thermostat Damper Motor Limit Control	Thermostat Limit Control Fan Control (FWA)	Parts Carried in Stock for Service and How Many?: Thermostats	Damper Motors	Limit Control	Fan Control	Relays	Transformers
ALABAMA														
Montgomery	yes	no	$2.50	mfr.	ourselves	$.....	$.....	$.....	6	0	3	3	3	0
ARIZONA														
Phoenix	yes	no	2.50	mfr.	elect.	———	Varies	———	6	0	2	2	...	2
Tucson	yes	no	2.50	mfr.	own men	.....	.....	.....	6	0	6	6	6	6
ARKANSAS														
Paragould	yes	no	1.50	mfr.	elect.	.....	.....	.....	0	0	0	0	0	0
CALIFORNIA														
Bakersfield	yes	no	2.25	.....	.....	.....	.....	.....	...	...	...	...	...	...
Eureka	yes	no	2.00	mfr.[1]	.....	.....	.....	.....	4	1	1	1	1	2
Martinez	yes	no	2.00	mfr.	own men	.....	.....	.....	9	0	4	4	0	4
Oakland	yes	no	3.00	.....	ourselves	.....	.....	.....	250	...	75	75	25	25
San Mateo	yes	no	1.75	mfr.[1]	elect.	.....	.....	28.00	2	0	2	1	2	2
CONNECTICUT														
Waterbury	yes	no	3.00	mfr.[1]	elect.	18.00	20.00	25.00	3	0	3	3	2	0
DELAWARE														
Laurel	yes	no	1.50	mfr.[1]	own men	.....	.....	.....	6	2	6	8	4	4
ILLINOIS														
Belleville	yes	no	2.25	elect. hse.	elect.	.....	.....	.....	6	6	6	6	6	6
Chicago	yes	no	{ 3.00 1st { 2.00 2nd	mfr.	own men	.....	.....	15.00	...	...	...	...	...	...
Elmhurst	yes	no	2.00	mfr.	own men	.....	.....	.....	6	...	4	2	8	15
Forest Park	yes	no	3.00	mfr.	elect.	6.00	6.00	16.00	2	2	2	2	0	2
Highland Park	yes	no	2.00	mfr.[2]	own men	.....	.....	.....	3	6	2	2	2	0
Jacksonville	yes	no	1.50	mfr.	own men	.....	.....	.....	2	0	2	2	1	0
Kankakee	yes	no	2.00	mfr.	own men	.....	.....	.....	1	1	1	1	1	1
Lincoln	yes	no	1.25	elect. hse.	elect.	.....	.....	.....	3	0	6	6	0	0
Mattoon	yes	no	1.50	mfr.	elect.	.....	.....	.....	6	3	2	6	2	6
Naperville	yes	no	1.50	mfr.	own men	.....	.....	.....	3	3	3	3	0	4
Ottawa	yes	no	2.00	mfr.	.....	.....	.....	.....	10	...	10	10	10	10
Paris	yes	no	1.90	elect. hse.	elect.	.....	.....	.....	3	0	1	0	1	1
Peoria	yes	no	2.25	mfr.	elect.	.....	.....	.....	6	3	4	6	2	3
Quincy	yes	no	1.75	.....	elect.	.....	.....	.....	...	...	...	...	...	...
Rock Island	yes	no	2.00	mfr.	elect.	.....	.....	.....	8	2	6	3	3	3
Wilmette	yes	no	3.50	mfr.	elect.	15.00	20.00	20.00	12	2	4	4	2	4
INDIANA														
Brazil	yes	no	1.00	mfr.	own men	.....	.....	.....	0	0	0	0	0	0
Columbia City	yes	no	1.00	mfr.	ourselves	.....	.....	.....	3	1	1	3	...	...
Fort Wayne	yes	no	{ 2.50 1st { 2.00 2nd	mfr.	ourselves	.....	.....	.....	9	7	9	9	4	7
Fort Wayne	yes	no	1.50	mfr.	own men	.....	.....	.....	0	0	0	0	0	0
Fort Wayne	yes	no	2.00	mfr.	own men	T&M	T&M	T&M	12	12	12	12	4	5
Hammond	yes	no	2.00	.....	ourselves	($3.00 per hour)			...	...	...	...	...	...
Indianapolis	yes	no	1.95	mfr.	own men	.....	.....	.....	1	1	3	5	1	1
La Porte	yes	no	1.50	mfr.	own men	.....	.....	.....	2	0	1	0	3	3
Marion	yes	no	1.50	mfr.	ourselves	.....	.....	.....	13	4	4	4	4	2
Vincennes	yes	no	1.50	mfr.	own men	.....	.....	.....	6	6	6	2	2	2

State and City	Do You Service Controls?	Do You Offer a Special Flat Sum Service? How Much?	Do You Charge by the Hour? How Much?	Who Repairs Your Control Instruments?	Who Installs Your New Control Systems? (Note 1-C)	How Much Does Electrician Charge You to Install?—(In Dollars)			Parts Carried in Stock for Service and How Many?					
						Thermostat and Damper Motor	Thermostat Damper Motor Limit Control	Thermostat Limit Control Fan Control (FWA)	Thermostats	Damper Motors	Limit Control	Fan Control	Relays	Transformers
IOWA														
Cedar Rapids	yes	no	2.50	mfr.	own men	.....	.....	.....	0	0	0	0	0	0
Davenport	yes	no	2.00	mfr.	elect.	.....	.....	.....	24	0	6	4	6	0
Des Moines	no	no	.....	mfr.	elect.	.....	.....	20.00	...	...	...	...	...	...
Marshalltown	yes	no	1.00 froz.	mfr.	elect.	.....	.....	.....	0	0	0	0	0	0
Mason City	yes	no	1.75	mfr.	elect.		Time plus mat.		2	0	2	2	1	2
Mason City	yes	no	1.75	mfr.	elect.		Time		2	0	2	2	0	0
Sioux City	yes	no	1.75	mfr.	ourselves	.....	.....	.....	3	1	2	3	0	0
Waterloo	yes	no	2.00	mfr.	elect.	.....	.....	.....	3	1	2	2	1	2
Waterloo	yes	no	1.75	mfr.	own men	.....	.....	.....	12	0	10	5	15	10
Webster City	yes	no	1.25-2.00	mfr.	ourselves	.....	.....	.....	3	...	1	2	1	2
KENTUCKY														
Louisville	yes	no	2.00	mfr.[1]	own men	.....	.....	.....	0	0	0	0	0	0
MASSACHUSETTS														
North Scituate	yes	no	2.00	elect. hse.	own men	.....	.....	.....	20	1	50	5	15	20
Worcester	yes	no	2.20	elect. hse.	elect.		Time		25	2	20	0	4	2
MICHIGAN														
Adrian	yes	no	2.50	dist.	own men	.....	.....	.....	3	2	2	1	3	1
Ann Arbor	yes	no	{ 2.50 night } 2.00 day	mfr.	elect.	7-10	10.00	18-25	2	1	4	2	4	2
Battle Creek	yes	no	{ 2.50 1st } 1.50 2nd	mfr.	own men	.....	.....	.....	6	3	6	5	3	5
Dearborn	yes	no	2.50	mfr.[1]	elect.	10-12	12.00	12.00	10	10	10	10	5	10
Detroit	yes	no	{ 3.50 1st } 2.50 2nd	mfr.	ourselves	7.50	8.00	10.00	5	0	3	3	2	2
Escanaba	yes	no	1.50	mfr.	elect.	2.00	3.00	15 up	1	1	1	1	1	...
Flint	yes	no	2.00	mfr.	ourselves	10.00	.....	.....	18	18	18	6	3	18
Flint	yes	no	{ 2.50 1st } 2.00 2nd	mfr.	own men	6.50	7.50	10.00	5	5	11	6	3	5
Grand Rapids	yes	no	.....	mfr.[1]	ourselves	.....	.....	.....	...	...	...	...	...	...
Highland Park	yes	$4.50	2.00 2nd	no	elect.	.....	.....	.....	12	12	20	24	6	12
Kalamazoo	yes	no	2.00	mfr.	ourselves	.....	.....	15.00	...	...	...	...	...	...
Kalamazoo	yes	no	1.50	mfr.	elect.	6.00	6.25	.....	6	3	6	6	10	8
Lansing	yes	no	2.00	mfr.	.....	.....	.....	.....	15	15	6	6	3	6
Muskegon	yes	no	{ 2.50 1st } 2.25 5th	mfr.	elect. wiring	.....	.....	.....	4	4	12	4	2	12
New Buffalo	yes	no	{ 1.50 1st } 1.25 2nd	mfr.	elect.	8.00	.....	.....	1	1	2	1	1	1
Saginaw	yes	no	2.25	mfr.[1]	own men	.....	.....	.....	12	1	10	10	1	6
Saginaw	yes	2.50-5.00	2.00	mfr.	own men	5-10	5-10	5-10	2	0	2	2	2	0
Sebewaing	yes	no	1.35	mfr.[1]	ourselves	.....	.....	.....	4	2	3	2	3	2
MINNESOTA														
East Grand Forks	yes	no	1.25	mfr.	ourselves	.....	.....	5-6	3	...	3	6	3	2
Minneapolis	yes	3.00	2.50	mfr.	.....	7.00	.....	.....	6	0	4	4	4	6
Tracy	yes	no	1.25	mfr.[1]	own men	.....	.....	.....	3	0	3	3	3	3
MISSOURI														
Joplin	yes	r.o	2.00	mfr.[1]	.....	.....	.....	.....	2	0	1	3	2	2
Kansas City	yes	3.50 1st	.....	dist.	own men	.....	.....	.....	18	12	6	12	..	12
St. Louis	yes	no	.....	elect. hse.	ourselves		(Stoker ap. $14)		1	0	1	1	2	0
St. Louis	yes	no	2.50	mfr.	own men	.....	.....	.....	6	0	10	10	2	20
St. Louis	yes	3.50	2.50 2nd	mfr.[1]	own men	.....	.....	.....	6	0	6	6	6	6
MONTANA														
Great Falls	yes	no	2.00	mfr.	elect.	.....	.....	15-18	10	2	6	6	3	6
NEBRASKA														
Lincoln	yes	no	1.50	mfr.[1]	own men	.....	.....	.....	10	3	6	10	3	6
Lincoln	yes	no	1.25	.....	own men	.....	.....	.....	...	...	...	2	1	0
North Platte	yes	no	1.50	mfr.	own men	.....	.....	.....	10	0	10	4	2	10
Omaha	yes	no	{ 1.50 1st } 1.00 2nd	.....	own men	.....	.....	.....	40	3	20	15	15	12
Omaha	yes	no	2.00	mfr.	own men	.....	.....	.....	12	4	12	12	4	4
Scottsbluff	yes	no	1.00	mfr.	own men	.....	.....	10-15	5	0	3	2	2	0
NEW HAMPSHIRE														
Manchester	yes	no	{ 1.50 1st } 1.35 2nd	dist.	own men	.....	.....	.....	12	3	12	6	6	6
NEW JERSEY														
Bogota	yes	no	2.00	.....	own men	.....	.....	.....	6	0	12	24	12	6
Penns Grove	yes	no	.....	mfr.	ourselves	.....	.....	.....	1	...	1	1	1	2
NEW YORK														
Buffalo	yes	no	2.00	mfr.[1]	own men	25.00	25.00	30.00	0	0	0	0	0	0
Buffalo	yes	no	1.75	mfr.	elect.	10.00	13.00	15.00	5	2	5	5	...	6
Elmira	yes	no	2.00	.....	own men	.....	.....	.....	2	0	2	2	0	2
Kingston	yes	no	.....	.....	own men	.....	.....	.....	2	0	2	2	2	2
Newburgh	yes	no	1.90-2.00	jobber	elect. (code)	.....	.....	.....	0	0	0	0	0	0
Olean	yes	no	1.65	mfr.	own men	.....	.....	.....	...	...	...	...	...	...
Rochester	yes	no	2.40	mfr.[1]	own men	.....	.....	.....	...	...	...	...	...	...
Rochester	yes	no	{ 3.00 1st } 1.75 2nd	dist.	own men	.....	.....	.....	2	2	2	2	1	2
Syracuse	yes	no	2.00	.....	own men	5.00	.....	.....	6	...	...	...	...	...
NORTH DAKOTA														
Wahpeton	yes	no	{ 2.00 1st } 1.50 2nd	mfr.	elect.	.....	.....	.....	4	0	3	2	1	1

State and City	Do You Service Controls?	Do You Offer a Special Flat Sum Service? How Much?	Do You Charge by the Hour? How Much?	Who Repairs Your Control Instruments?	Who Installs Your New Control Systems? (Note 1-C)	How Much Does Electrician Charge You to Install?—(In Dollars): Thermostat and Damper Motor	Thermostat Damper Motor Limit Control	Thermostat Limit Control Fan Control (FWA)	Parts Carried in Stock for Service and How Many?: Thermostats	Damper Motors	Limit Control	Fan Control	Relays	Transformers
OHIO														
Ashland	yes	no	2.25	mfr.	own men	.....	.....	.....	6	6	6	2	0	6
Barberton	yes	no	.....	mfr.[1]	elect. (2.25 hr.)	.....	.....	.....	6	1	2	6	1	5
Big Prairie	yes	no	1.00	mfr.	ourselves	.....	.....	.....	1	0	1	1	0	1
Canton	yes	no	2.00	mfr.	own men	.....	.....	.....	...	...	...	...	...	...
Cleveland	yes	no	2.50	.....	elect.	.....	.....	.....	0	0	0	...	...	...
Cleveland	yes	no	2.50-5.00	mfr.	ourselves elect. (1.75 hr.)	.....	.....	.....	20	...	20	...	...	5
Columbus	yes	no	2.50 1st; 1.50 2nd	mfr.	own men	.....	.....	.....	5	2	6	3	...	5
Columbus	yes	no	1.50	mfr.	own men	.....	.....	.....	6	1	6	3	0	6
Columbus	yes	no	.....	mfr.	ourselves	.....	.....	.....	12	6	12	12	4	6
Dayton	yes	no	2.00	mfr.[2]	elect.	.....	.....	.....	0	0	0	0	0	0
Dayton	no	no	.....	.....	elect.	10.50	11.50	12.00	...	...	...	...	...	...
Dover	yes	no	1.50	mfr.	own men	.....	.....	.....	2	2	2	0	0	0
Findlay	yes	no	1.50	mfr.[1]	own men	.....	.....	.....	6	2	6	6	3	3
Greenville	yes	no	1.00	.....	own men	.....	.....	.....	3	1	1	1	1	1
Hamilton	yes	no	1.50	.....	own men	5.00	5.00	5.00	5	5	5	5	5	5
Lakewood	no	no	2.50	.....	own men install	.....	.....	.....	...	...	...	...	...	...
Mansfield	yes	no	2.50	mfr.	elect.	.....	.....	.....	20	4	10	10	2	2
Middletown	yes	no	1.50	.....	ourselves	.....	7.50	14.00	1	1	1	1	1	1
Ravenna	.....	no	.....	mfr.	.....	.....	.....	.....	...	...	...	...	...	...
Sandusky	yes	no	2.50	mfr.	elect.	15.00	.....	.....	2	2	2	2	1	1
Sidney	yes	no	1.50	.....	ourselves	.....	.....	.....	1	1	1	1	...	...
Springfield	yes	no	2.50-3.00	mfr.	own men	.....	.....	.....	1	1	1	1	1	1
Toledo	yes	no	2.75 1st; 2.00 2nd	mfr.	own men	.....	.....	.....	20	2	12	12	12	4
Youngstown	yes	no	2.30-2.50	mfr.	own men	.....	.....	.....	6	6	6	6	6	6
OKLAHOMA														
Oklahoma City	yes	no	2.50	mfr.	own men	.....	.....	.....	12	3	6	6	0	12
Tulsa	yes	no	2.50	elect. hse.	own men	.....	.....	.....	6	...	6	6	6	6
PENNSYLVANIA														
Clearfield	yes	no	1.60	mfr.	own men 90% elect. 10%	.....	.....	.....	5	3	5	2	6	3
Corry	yes	no	1.25-1.50	mfr.	own men	.....	.....	.....	2	2	2	1	1	2
Erie	yes	no	1.85	elect. hse.	own men	.....	.....	.....	3	2	3	3	3	4
Latrobe	yes	no	1.75	.....	elect.	.....	7.00	5.00	3	3	1	1	...	2
Meadville	yes	no	1.60	mfr.	elect.	6.00	6.00	.....	2	2	2	2	2	2
Mechanicsburg	yes	no	1.00	mfr.	elect.	.....	.....	.....	1	0	1	1	2	3
Pittsburgh	yes	no	.....	mfr.	ourselves	.....	.....	.....	3	3	3	3	6	6
Pittsburgh	yes	no	3.50 1st; 2.25 2nd	mfr.[1]	own men	10-15	10-15	10-20	10	4	10	10	5	10
Reading	yes	no	2.00	mfr.	own men	17.00	5.00	5.00	10	10	20	4	10	10
Rimersburg	yes	no	1.25	.....	ourselves	.....	.....	.....	15	15	15	15	2	4
Tarentum	yes	no	2.80[3]	elect. hse.	own men	8-12	.....	.....	50	40	6	6	1	5
SOUTH DAKOTA														
Yankton	yes	no	1.50	mfr.	ourselves	.....	.....	.....	4	0	2	2	1	6
TEXAS														
Dallas	yes	no	2.50	mfr.	ourselves	.....	.....	.....	6	3	6	2	6	12
Houston	yes	no	1.60	mfr.	.....	.....	.....	.....	50	2	12	10	2	10
San Antonio	yes	no	2.00	mfr.	own men	.....	.....	.....	12	...	4	2	...	10
VERMONT														
Lyndonville	yes	no	1.00	mfr.	ourselves	.....	.....	.....	2	1	6	1 parts		2
WASHINGTON														
Seattle	yes	no	3.00	mfr.	own men	10-15	4.00	14 ap.	100	12	30	42	20	20
WEST VIRGINIA														
Morgantown	yes	no	1.25	elect. hse.	elect.	.....	.....	.....	3	6	2	2	0	0
WISCONSIN														
Beaver Dam	yes	no	1.00-1.25	mfr.	ourselves	.....	.....	.....	0	0	1	1	1	0
Jackson	yes	no	1.40	mfr.	ourselves	.....	.....	.....	12	2	12	12	2	1
Madison	yes	no	2.25	mfr.	own men	.....	.....	.....	2	1	6	6	2	6
Milwaukee	yes	no	2.25	mfr.	elect.	.....	.....	.....	...	...	...	...	...	...
Milwaukee	yes	no	2.25	mfr.[2]	own men	5-7	8-10	12-15	6	6	6	6	2	8
Milwaukee	yes	no	2.40	mfr.	elect.	6-8	10-12	14.00	4	2	2	2	2	7
Oconomowoc	yes	no	2.00	mfr.	elect.	.....	.....	15 ap.	0	0	1	1	1	0
Rhinelander	yes	no	1.50	mfr.	elect.	.....	.....	.....	5	0	6	6	...	...
Shawano	yes	no	1.20	mfr.	elect.	.....	.....	.....	y	y	y	y	y	y
Superior	yes	no	2.00	mfr.	elect.	.....	.....	.....	...	...	...	...	...	...
Two Rivers	yes	no	1.75	.....	elect.	.....	.....	.....	2	...	2	2	2	0
Waukesha	yes	no	1.50	mfr.	.....	.....	.....	.....	1	1	1	1	1	2
Wausau	yes	no	1.50	mfr.	own men	.....	.....	.....	6	6	6	6	2	6
WYOMING														
Sheridan	yes	no	2.00	elect.	elect.	10.00	15.00	20.00	1	1	2	2	0	0

[1] = Or, special electrical house.
[2] = Distributor or special electrical house.
[3] = Two men and truck.
T&M = Time plus material.
ap. = Approximately.
elect. = Electrician, local.
elect. hse. = Specialty electrical house.
dist. = Distributor.
y = Yes.

THE STUDY of oil burner service offered by warm air heating dealers emphasizes, we think, two important facts. First, a very large number of warm air heating dealers also sell, install and service oil burners. Were it not for this service, the troubles of the oil burner owner requiring service would be multiplied a thousand-fold because the oil burner specialty sales organizations which were once so numerous have gone out of business since the war started. Warm air heating dealers must, accordingly, keep the oil burners operating. The second important fact is found in the foot notes to the study where the operations each dealer does in servicing a burner or oil burning furnace are listed. Many of these are pretty much like one or more others—still there is some difference so the complete list is published so all readers may study the operations and adjust their own service to include any ideas which seem timely. Note, in connection with what is done, how most dealers now charge by the hour instead of offering a flat sum. But these dealers still offer a published service plan which the owner can buy at so much per hour.

OIL BURNERS

State and City	Do You Service Oil Burners?	Do You Offer a Special Flat Sum Service? How Much?	Do You Charge by the Hour? How Much?	Are You "On Call" 24 Hours a Day—or, How Many Hours?	What Do You Do in Your Offered Service Plan? (See Notes)	Do You Repair Motors or Pumps?	Parts Carried in Stock for Service? And How Many? Motors	Pumps	Strainers	Electrodes	Ready-Built Comb. Chambers
ALABAMA											
Montgomery	yes	$.....	$2.50	yes	.....	no	0	0	0	0	0
ARIZONA											
Phoenix	yes	.....	2.50	yes	.....	no	0	0	0	0	0
Tucson	yes	.....	2.50	yes	.....	no	3	2	6	3	0
ARKANSAS											
Paragould	yes	.....	1.50	.....	.....	no	1	0	6	0	0
CALIFORNIA											
Eureka	yes	1.50 min. +	2.00	yes	required	no	3	2	sev.	1	1
Oakland	yes	.....	3.00	16	.....	yes	50	50	50	100	0
San Mateo	yes	.....	1.75	yes	.....	no	2	1	4	4	0
CONNECTICUT											
Waterbury	yes	8.50	3.00	no	1-0	no	0	2	0	0	0[1]
DELAWARE											
Laurel	yes	no	1.50	yes	.....	no	3	6	25	12	6
ILLINOIS											
Belleville	yes	.....	2.25	no	.....	no	0	0	....	0	0
Chicago	yes	no	{ 3.00 1st { 2.00 2nd	yes	.....	yes—motors no—pumps	 10	 4	 6	 10	 0
Elmhurst	yes	8.00	{ 3.00 1st { 2.00 2nd	yes	required	no	16	10	12	4	0
Highland Park	yes	.....	2.00	no	.....	no	....	....	....	....	....
Jacksonville	yes	.....	1.50	yes	.....	no	6	0	6	0	0
Kankakee	yes	.....	2.00	no	.....	.....	....	....	....	....	....
Mattoon	yes	.....	1.50	.....	.....	no	6	0	0	0	0
Naperville	yes	.....	1.50	yes	.....	no	3	0	6	1	1
Ottawa	yes	.....	2.00	yes	.....	no	y	....	....	....	....
Paris	yes	no	1.90	no	.....	no	2	1	1	0	0
Quincy	yes	.....	1.75	emergency	required	no—motors yes—pumps	....	....	....	....	....
Rock Island	yes	3.00—1½ hr.	2.00	yes	complete	no	2	12	Limited 25	4	2
Wilmette	yes	9 to 10.50	{ 3.50 1st { 2.50 2nd	yes	2-0	no	2	4	4	4	1
INDIANA											
Fort Wayne	yes	no	{ 2.50 1st { 2.00 2nd	yes	.....	no	(3 complete burners)				
Fort Wayne	yes	no	2.00	yes	.....	no	7	4	6	25	2
Indianapolis	yes	5.00	1.95	yes	3-0	no	5	1	10	1	0[2]
La Porte	yes	.....	1.50	yes	.....	no	2	1	1	6	....
Marion	yes	.....	1.50	yes	.....	no	4	4	4	4	0

State and City	Do You Service Oil Burners?	Do You Offer a Special Flat Sum Service? How Much?	Do You Charge by the Hour? How Much?	Are You "On Call" 24 Hours a Day—or, How Many Hours?	What Do You Do in Your Offered Service Plan? (See Notes)	Do You Repair Motors or Pumps?	Parts Carried in Stock for Service? And How Many? Motors	Pumps	Strainers	Electrodes	Ready-Built Comb. Chambers
IOWA											
Davenport	yes	2.00 plus	2.00	yes	4-0	no	2	2	6	2	0
Des Moines	yes	no	1.50	yes	.....	yes—motors	....	....	....	....	....
						no—pumps	....	....	....	....	....
Marshalltown	yes	.....	1.00 hr.	yes	.....	no	(Normally yes—none now)				
Mason City	no*	.....	1.75 2.00*	.....	.....	no	....	....	....	....	....
Mason City	no	.....	1.75	yes	.....	no	0	0	0	0	0
Sioux City	no		(Oil dealers service customers' burners free)				....	....	....	....	....
Sioux City	no	.....	1.75	no	.....	no	....	....	....	....	....
Spencer	yes	no	1.25	yes	2-0	no	....	....	....	....	....
Waterloo	yes	no	2.00	no	.....	no	1	1	1	1	0
Waterloo	yes	5.50	1.75	yes	5-0	no	10	10	5	10	2
Webster City	yes	no	1.25 day 2.00 night	yes	.....	no	(Several)				0
MASSACHUSETTS											
North Scituate	yes	2.50 call 15.00 yr.[3]	2.00	yes	6-0	no	12	20	50	25	10
Worcester	yes	no	2.20	yes	.....	no	2	2	1	4	0
MICHIGAN											
Adrian	yes	no	2.50	yes	.....	no	1	....	1	3	....
Ann Arbor	yes	no	.....	yes	.....	no	(None now)				
Battle Creek	yes	12.50	2.50 1st 1.50 2nd	yes	7-0	no	15	4	10	12	1
Dearborn	yes	5.00	2.50	18	8-0	no	50	10	25	25	0
Detroit	yes	10.00	3.50 1st 2.50 2nd	no	9-0	no	....	....	....	....	....
Escanaba	yes	no	1.50	yes	.....	no	....	....	....	....	....
Flint	yes	no	3.00 1st 2.00 2nd	yes	.....	no	4	5	12	6	6
Flint	yes	no	3.50 1st 2.50 2nd	yes	.....	no	7	12	28	12	0
Highland Park	yes	8.00	.....	yes	2-0	no—motors	....	....	....	....	....
						yes—pumps	6	6	12	12	0
Kalamazoo	yes	no	2.00	yes	.....	no	3	....	5	....	....
Kalamazoo	yes	no	1.50	yes	.....	no	19	14	6	8	5
Lansing	yes	4.00	2.00	yes	10-0	no	3	5	6	2	0
Midland	yes	.....	2.50	yes	11-0	no	1	1	2	1	2
Muskegon	yes	7.50 up	2.50 1st 2.25 5th	yes	2-0	no	2	1	2	2	0
New Buffalo	yes	10.00	1.50 1st 1.25 2nd	yes	2-0	no	0	1	4	4	1
Saginaw	yes	no	2.25	yes	.....	no—motors	....	....	....	....	....
						some pumps	4	4	2	6	....
Saginaw	yes	2.50-5.00	2.00	yes	12-0	no	4	0	0	1	0
Sebewaing	yes	no	1.35	yes	.....	no—motors	....	....	....	....	....
						yes—pumps	2	1	6	6	0
MINNESOTA											
East Grand Forks	yes	no	1.25	yes	.....	no	3	8	12	10	2
Minneapolis	yes	3.00	2.50	yes	10-0	no	6	3	24	12	6
Tracy	yes	no	1.25	yes	.....	no	3	8	3	6	3
MISSOURI											
Kansas City	yes	3.50	.....	.....	24-0	no	y	....	....	....	....
Kansas City	yes	no	3.50 1st	yes	13-0	no	0	2	5	0	0
St. Louis	yes	3.50	2.50 2nd	yes	12-0	no	4	3	6	6	0
MONTANA											
Great Falls	yes	no	2.00	no	.....	no	4	1	2	2	0
NEBRASKA											
Lincoln	yes	.....	1.50	yes	T&M	no	0	0	0	0	0
Omaha	yes	no	1.50 1st 1.00 2nd	yes	.....	no	25	40	100	100	Part
Omaha	yes	.....	2.00	yes	.....	no	12	6	6	8	4
Scottsbluff	yes	yes	1.00	yes	14-0	no	4	3	5	4	4
NEW HAMPSHIRE											
Manchester	yes	12.00	1.50 1st 1.35 2nd	yes	15-0	no—motors	....	....	....	....	....
						yes—pumps	10	10	10	12	0
NEW JERSEY											
Bogota	yes	3.50	.....	no	12-0	no	14	5	4	0	0
Penns Grove	yes	2.50	2.50 1st 1.75 2nd	no	8-0	no	2	4	6	6	1
NEW YORK											
Buffalo	yes	no	2.00	no	.....	no	n	n	y	y	n
Corning	yes	no	1.50	yes	.....	no	1	1	6	2	0
Elmira	yes	no	2.00	no	.....	no	3	2	3	....	0
Kingston	yes	yes	.....	yes	14-0	no	2	2	2	2	2
Olean	yes	no	1.65	yes	.....	no	....	....	....	....	....
Rochester	yes	no	3.00 1st 1.75 2nd	yes	.....	no	....	....	....	....	....
Rochester	yes	no	3.00 1st 2.40 2nd	no	.....	no	0	0	0	0	0
Syracuse	yes	4.50	2.00	yes	4-0	no	6	3	24	....	....

State and City	Do You Service Oil Burners?	Do You Offer a Special Flat Sum Service? How Much?	Do You Charge by the Hour? How Much?	Are You "On Call" 24 Hours a Day—or, How Many Hours?	What Do You Do in Your Offered Service Plan? (See Notes)	Do You Repair Motors or Pumps?	Parts Carried in Stock for Service? And How Many? Motors	Pumps	Strainers	Electrodes	Ready-Built Comb. Chambers
NORTH DAKOTA											
Minot	yes	no	1.50	.....	.....	no	0	0	0	0	0
Wahpeton	yes	no	2.00 1st 1.50 2nd	yes	.....	no	1	3	3	6	1
OHIO											
Ashland	yes	no	2.25	yes	.....	no	0	0	0	0	0
Barberton	yes	no	no	no	16-0	no	2	1	6	6	0
Dayton	yes	7.50	2.50	no	17-0	no	....	....	....	....	....
Findlay	yes	.....	1.50[4]	yes	..... *	no—motors some pumps	....	....	....	....	....
Hamilton	yes	5.75	.....	yes	17-0	no	2	2	3	3	0
Mansfield	yes	no	2.50	yes	.....	no	....	....	....	....	....
Middletown	yes	14.75 yr.	.....	yes	18-0	no	0	0	0	0	0
Sidney	yes	no	1.50	yes	1-0	no	1	1	3	1	0
Springfield	yes	no	2.50-3.00	yes	.....	no	0	0	0	0	0
Toledo	yes	9.85	2.75 2.00	yes	19-0	no	25	25	50	25	6
OKLAHOMA											
Oklahoma City	yes	no	2.50	no	.....	no	3	3	2	3	0
PENNSYLVANIA											
Clearfield	yes	no	1.60	yes	.....	no	y	y	y	y	n
Corry	yes	5.00	1.25-1.50	yes	25-0	no	....	2	6	11	0
Meadville	yes	no	1.60	no	.....	no	....	y	....	y	....
Mechanicsburg	yes	no	1.00	yes	.....	no	2	1	3	4	0
Pittsburgh	yes	no	.....	yes	.....	no—motors yes—pumps	....	....	....	....	....
Reading	yes	22.00 yr.	2.00	yes	20-0	no	7 20	1 20	7 35	y 5	0 0
Tarentum	yes	12.00	.....	16 hrs.	1-0	no	2	15	....	0	0
TEXAS											
Dallas	yes	no	2.50	yes	.....	no—motors yes—pumps	....	....	....	....	....
San Antonio	yes	no	2.00	yes	.....	no	2 3	2	....	....	....
VERMONT											
Lyndonville	yes	no	1.00	yes	.....	.....	4	2	3	6	0
WASHINGTON											
Seattle	yes	3.00 min. 6.50	3.00	no	1-0	no	12	6	60	24	20
WISCONSIN											
Beaver Dam	yes	no	1.00	yes	.....	no	1	1	0	0	0
Jackson	yes	no	1.40	yes	.....	no	2	2	12	6	1
Madison	yes	no	2.25 1.50 min.	yes	.....	no	4	6	....	6	0
Milwaukee	yes	5.50	2.25	yes	21-0	no	5	2	25	12	2
Milwaukee	yes	3.00-5.00	2.40	yes	22-0	no	3	2	6	y	y
Oconomowoc	yes	7.50 plus	2.00	.....	23-0	no	1	1	2	2	0
Rhinelander	yes	no	1.50	12	.....	no	4	1	2	3	0
Shawano	yes	no	1.20	yes	.....	no	y	y	y	y	n
Superior	yes	no	2.00	.....	.....	no	....	....	....	....	....
Two Rivers	yes	no	1.75	yes	T&M	no	y	y	y	....	....
Waukesha	yes	2.00-5.00	1.50	yes	1-0	no	1	1	6	2	1
Wausau	yes	5.00	1.50	yes	1-0	no	1	1	1	1	0

* = All calls referred to one man who specializes in oil burners @ $2.00 hr.
fr. = frozen.
T&M = Time plus material.
[1] = Mfr. is 30 miles away.
[2] = One-day delivery.
[3] = Maximum of 10 service calls per year.
[4] = plus rental charge.
1-0 = Clean furnace and smoke pipe; clean and adjust oil burner.
2-0 = Completely clean and check every moving part of oil-burning furnace and blower.
3-0 = Clean strainer, controls; reset and clean electrodes and tip; service blower, motor, humidifier.
4-0 = Check all controls; clean complete burner; adjust.
5-0 = Summer clean-up; vacuum furnace, clean humidifier, strainers, oil motor, check burner and controls.
6-0 = Clean nozzles, strainer and burner; adjust controls and thermostat; oil motors, flush oil lines.
7-0 = Service only, no parts—fall clean-up and a call every 60 days. No charge for emergency calls.
8-0 = Clean burner parts, oil motor; check points, combustion; clean oil line, pump, strainer and nozzle—all parts extra.
9-0 = Clean burner, nozzles and screens, check oil filter, oil motor, make CO_2 reading.
10-0 = Fall check-up—clean burner, controls and make adjustments, draft, CO_2 and oil.
11-0 = Check oil and air filters, clean nozzle, adjust electrodes, check fire bowl, oil motors, check controls, air, and stack temperature.
12-0 = Check-up or minor repair.
13-0 = Clean electrodes and nozzle; oil motor, check controls; change filter (charge for filter cartridge).
14-0 = Free burner service to oil customers, plus repairs.
15-0 = Yearly inspection—clean furnace, chimney base, add water-treating compound, clean contacts, oil filters, complete check-up.
16-0 = Oil service is handled by The Standard Oil Co.; we carry repairs for our line.
17-0 = Inspect and clean unit, change filters and oil motor.
18-0 = Check burner, blower, filters and controls every 90 days; replace 1 set filters, adjust combustion and oil motors.
19-0 = Vacuum furnace and smoke pipe, check combustion chamber for cracks and leaks; clean and oil motor; clean fan; clean strainers; test transformer; clean and adjust electrodes; clean burner jet; clean burner tube; check for oil leaks; clean helix spring on master control relay; vacuum blower and cabinet.
20-0 = Clean, oil and adjust burner and heater; monthly inspection; furnish all labor, plus repairs.
21-0 = Clean all soot, nozzle, electrodes, strainer and pump; adjust and clean controls, test draft, take CO_2 readings.
22-0 = Clean and check controls; etc.; vacuum furnace and smoke pipe.
23-0 = $7.50 comb. analysis; heat wastage survey, $7.50 up; summer clean-up, $7.50; combustion analysis CS75-39, $7.50; survey 50c-$1.00 per room, $7.50 minimum.
24-0 = Clean carbon off burner; vacuum inside furnace; take down and clean smoke pipe; base of flue and re-cement smoke pipe into flue.
25-0 = Clean furnace, adjust and check burner, oil motor, flush out burner and sediment trap.

Not quite so many warm air heating dealers service stokers as do service work on controls, oil burners, fans, filters and furnaces, but the difference is so small that it can be said we are an important factor in the stoker service field. Probably, after the war, if stokers attain the acceptance now looked for, more warm air heating dealers will sell and service stokers than pre-war. It is interesting to note—but we cannot say why—there seem to be more "flat-sum" stoker services offered than for oil burners, controls, etc. Perhaps it is because stokers are all pretty much alike and service is quite similar regardless of stoker make. The contractors who charge by the hour report hourly charges just about the same as for oil burners, controls, furnaces, indicating, we believe, that dealers have established an hourly rate for service which shows a profit and they apply this charge over all types of service. Finally, as in the study on oil burner service, the explanations at the end of the tabulation itemize just what each dealer does in a typical routine service call. While there is some degree of uniformity, there is more difference than appeared in the oil burner study. Dealers may find these notes of use in revamping their present service operations or adjusting prices (with OPA approval).

STOKERS

State and City	Do You Service Stokers?	Do You Offer a Special Flat Sum Service? How Much?	Do You Charge by the Hour? How Much?	What Do You Do in the Flat Sum Service? (See Footnotes)	Are You "On Call" 24 Hours a Day?	Parts Carried in Stock for Service and How Many? Motors	Worms	Tuyeres	Transmissions	Blowers
ALABAMA										
Montgomery	yes	no	$2.50	.....	yes	6	0	0	0	0
ARIZONA										
Phoenix	yes	.....	2.50	.....	no	0	0	0	0	0
ARKANSAS										
Paragould	yes	$6.00	.....	2-S	no	1	0	1	0	0
ILLINOIS										
Belleville	yes	.....	2.25	.....	no	6	6	6	0	0
Forest Park	yes	8.50	3.00 1st 2.50 2nd	2-S	no	0	0	0	0	0
Highland Park	yes	.....	2.00	.....	yes	4	0	2	0	0
Jacksonville	yes	6.50 summer	1.50	4-S	yes	6	0	0	0	0
Kankakee	no	.....	2.00	.....	no	1	0	0	0	0
Lincoln	yes	.....	1.25	.....	yes	4	6	0	0	0
Mattoon	yes	.....	.....	.....	.....	6	0	0	0	0
Naperville	yes	.....	.....	.....	yes	2	0	0	0	0
Ottawa	yes	.....	2.00	.....	yes	6	20	10	1	6
Paris	yes	.....	1.90	.....	no	0	1	0	0	0
Peoria	yes	.....	2.25	.....	yes	3	0	0	0	0
Quincy	yes	.....	1.75	.....	emergency	....	....	....	....	....
Rock Island	yes	3.00-1½ hrs.	2.00	Stoker	yes	2	1	0	0	0
Sheldon	yes	no	1.00	.....	yes	0	0	0	0	0
Wilmette	yes	estimates	.....	.....	yes	2	0	3	0	0
INDIANA										
Fort Wayne	yes	no	2.50 1st 2.00 2nd	.....	yes	0	0	0	0	0
Fort Wayne	yes	.....	1.50	.....	no	....	....	....	....	....
Fort Wayne	yes	no	2.00	.....	yes	2	3	0	0	0
La Porte	yes	.....	1.50	.....	yes	....	....	....	....	....
Marion	yes	.....	1.50	.....	yes	0	0	0	0	0
Terre Haute	yes	6.50	1.50 mech. 1.00 helper	2-S	yes	2	6	2	2	0
Vincennes	yes	.....	1.50	.....	yes	....	....	....	....	....
IOWA										
Cedar Rapids	yes	no	2.50	.....	no	0	0	0	0	0
Davenport	yes	2.00	2.00	5-S	yes	4	12	5	parts	0
Davenport	*no	.....	2.25	.....	.....	0	2	0	0	0
Des Moines	yes	.....	1.50	.....	yes	....	....	....	....	....
Marshalltown	yes	.....	1.00 frozen	.....	yes	0	0	0	0	0
Mason City	yes	no	1.75	.....	.....	2	1	2	0	1
Mason City	yes	.....	1.75	.....	yes	0	0	0	0	0
Sioux City	yes	.....	2.00	.....	yes	——— (local jobber) ———				
Sioux City	yes	.....	1.75	.....	no	....	....	....	....	....
Spencer	yes	.....	1.25	.....	yes	....	....	....	....	....
Waterloo	yes	7.00 summer	1.75	3-S	yes	10	6	5	4	5
Webster City	yes	no	?	?	yes	sev.	10	0	0	0
KENTUCKY										
Lexington	yes	5.95	.....	1-S	yes	1	4	....	1	....
Louisville	yes	no	2.00	.....	no	0	0	0	0	0

State and City	Do You Service Stokers?	Do You Offer a Special Flat Sum Service? How Much?	Do You Charge by the Hour? How Much?	What Do You Do in the Flat Sum Service? (See Footnotes)	Are You "On Call" 24 Hours a Day?	Parts Carried in Stock for Service and How Many? Motors	Worms	Tuyeres	Transmissions	Blowers
MASSACHUSETTS										
Boston	yes			(handled mostly by coal dealers in the residential field)						
Worcester	yes	.....	2.20	.....	yes	0	0	0	0	0
MICHIGAN										
Adrian	yes	.....	2.50	.....	yes	1	1	3	0	0
Ann Arbor	yes	.....	{ 2.00 1st { 1.50 2nd	.....	yes	1	1	3	1	0
Dearborn	yes	5.00	2.50	4-S	18 hrs.	50	4	4	0	4
Escanaba	yes	7.50	1.50	8-S	yes	2	0	6	0	0
Flint	yes	.....	2.00	.....	yes	4	3	6	0	0
Flint	yes	.....	{ 3.50 1st { 2.50 2nd	.....	yes	6	—some—		0	0
Kalamazoo	yes	.....	1.50	.....	yes	4	1	4	2	0
Lansing	yes	5.00	2.00	.....	yes	4	3	....	parts	3
Midland	yes	no	2.50	9-S	yes	4	4	4	2	0
Muskegon	yes	.....	{ 2.50 1st-4th { 2.25 5th	.....	yes	0	0	0	0	0
Saginaw	yes	no	2.25	.....	yes	1	0	1	0	0
Saginaw	yes	2.50-5.00	2.00	1-S	yes	4	3	6	0	0
Sebewaing	no	.....	1.35	.....	yes	2	2	2	2	0
MINNESOTA										
Minneapolis	no	.....	.....	10-S	.....	....	....	....	....	....
Tracy	yes	no	1.25	.....	yes	3	0	0	0	0
MISSOURI										
Kansas City	yes	5.00	no	4-S	yes	0	....	....	0	2
St. Louis	yes	8.00	.....	2-S	yes	6	16	0	0	0
St. Louis	yes	3.50 plus	2.50 add. repair	.....	yes	6	6	0	2	2
NEBRASKA										
Lincoln	yes	no	1.50	.....	yes	4	0	0	0	0
Lincoln	yes	.....	1.25	.....	yes	0	0	0	0	0
North Platte	yes	.....	1.50	.....	yes	....	....	....	0	0
Omaha	no	.....	1.50	.....	no	0	0	0	0	0
Omaha	yes	.....	{ 1.50 1st { 1.00 2nd	.....	yes	10	20	100	6	5
Omaha	yes	.....	2.00	.....	yes	2	1	0	1	0
NEW HAMPSHIRE										
Manchester	yes	15.00	{ 1.50 { 1.35	11-S	yes	12	12	100	6	0
NEW YORK										
Corning	yes	no	1.50	.....	yes	0	0	0	0	0
Olean	yes	.....	1.65	.....	yes	....	....	....	....	....
Syracuse	yes	4.50	2.00	1-S	no	....	....	....	....	....
NORTH DAKOTA										
Minot	yes	no	1.50	.....	yes	0	0	0	0	0
Wahpeton	yes	.....	{ 2.00 1st { 1.50 2nd	.....	yes	0	0	0	0	0
OHIO										
Ashland	yes	3.50	.....	12-S	yes	1	1	1	0	0
Big Prairie	yes	no	1.00	.....	yes	2	2	0	0	0
Columbus	yes	7.00	.....	13-S	yes	8	5	20	....	....
Columbus	yes	.....	1.50	.....	yes	2	2	4	0	0
Columbus	yes	7.00	.....	4-S	yes	12	24	50	6	2
Dayton	yes	.....	2.50	.....	no	0	0	0	0	0
Findlay	yes	.....	1.50 plus rental chg. eq.	.....	yes	1	2	24	....	1
Greenville	yes	.....	1.00	.....	.....	....	....	....	....	....
Hamilton	yes	5.50	no	Clean, oil	yes	0	0	0	0	0
Mansfield	yes	8.95	.....	14-S	yes	1	0	1	0	0
Sandusky	yes	2.00	2.50	.....	no	1	2	2	0	2
Sidney	yes	.....	.....	.....	yes	....	....	....	....	....
Springfield	yes	no	2.50-3.00	.....	yes	2	0	0	0	0
Toledo	yes	9.85	{ 2.75 1st { 2.00 2nd	15-S	yes	25	9	9	1	0
PENNSYLVANIA										
Clearfield	yes	no	1.60	none	yes	yes	0	0	0	0
Corry	yes	2.75	.....	16-S	yes	0	3	2	0	0
Hollidaysburg	yes	.....	1.50	.....	yes	0	0	0	0	0
Meadville	yes	.....	1.60	.....	no	0	0	0	0	0
Mechanicsburg	yes	no	1.00	.....	yes	0	0	0	0	0
Pittsburgh	yes	11.00	.....	3-S	no	0	0	0	0	0
Pittsburgh	yes	.....	.....	.....	yes	0	0	0	0	0
Reading	yes	no	2.00	.....	yes	5	2	10	3	0
Rimersburg	yes	no	1.25	no	yes	2	1	0	0	0
Tarentum	yes	no	2.80 (2 men & truck)	.....	yes	2	0	2	0	1
SOUTH DAKOTA										
Rapid City	yes	.....	1.50	.....	no	0	0	0	0	0
Yankton	yes	.....	1.50	.....	.....	....	....	....	....	....
WASHINGTON										
Seattle	yes	3.00	3.00	Min. 1 hr. call	no	6	6	6	2	1

State and City	Do You Service Stokers?	Do You Offer a Special Flat Sum Service? How Much?	Do You Charge by the Hour? How Much?	What Do You Do in the Flat Sum Service? (See Footnotes)	Are You "On Call" 24 Hours a Day?	Parts Carried in Stock for Service and How Many? Motors	Worms	Tuyeres	Transmissions	Blowers
WISCONSIN										
Beaver Dam	yes	no	1.00	.....	yes	0	0	0	0	0
Jackson	yes	no	1.40	.....	yes	1	0	0	0	0
Milwaukee	yes	7.50	2.25	3-S	yes	3	6	15	0	0
Milwaukee	yes	12.00	2.40	4-S	yes	2	0	0	0	0
Rhinelander	yes	.....	1.50	.....	12 hrs.	4	0	0	0	0
Shawano	yes	.....	1.20	.....	yes	y	n	y	n	n
Two Rivers	yes	.....	1.75	.....	yes	....	....	....	....	....
Waukesha	yes	.....	1.50	spec. stoker man	yes	0	0	0	0	0
Wausau	yes	no	1.50	.....	yes	2	0	0	0	0

* = Turn over to another company.
1-S = Clean, adjust, repair.
2-S = Remove fly ash, clinkers, paint hopper, change oil, oil motor; run through oiled sawdust, clean tuyeres.
3-S = Remove fly ash, clinkers, paint hopper, clean furnace, oil all moving parts, change oil.
4-S = Check stoker, controls, oil motor, change oil, oil or paint hopper, clean furnace.
5-S = Make air adjustments and repair any trouble.
3-S = Summer—vacuum furnace, clean tuyeres, humidifiers, clean and paint hopper, change oil in transmission, oil motors and check everything.
1-S = Clean and service furnace and stoker.
8-S = Vacuum furnace, smoke pipe, base of stack, clean tuyeres, plenum, auxiliary air line, seal air leaks, remove coal and clean and paint inside hopper, oil motor, check fan, flush and refill gear case, inspect and adjust dampers, regulators, V-belts, controls.
9-S = Clean out fly ash, wind box, check tuyeres, worm, motor and fan, transmission, controls, clock settings, stack temperature and control.
10-S = Co-operate with coal companies who service.
11-S = Inspect and clean, change transmission oil, check belts, clean and paint hopper, check and adjust plates, tuyeres.
12-S = Clean fly ash, empty and oil paint hopper, clean out burner above and **below**, oil motor, check for noise, adjust draft and check fan belt.
13-S = Seventeen operations—clean, paint hopper, drain oil, refill, clean furnace, smoke pipe, base of flue, etc.
14-S = Vacuum plant, clean retort and hopper, oil motor, transmission, worm and hopper.
15-S = Paint inside of hopper to retard rusting, clean openings in tuyeres, check retort, clean air chamber, clean auxiliary air line, clean and inspect fan blades, flush out gear and refill with proper lubricant, run old oil through worm, check fan and worm gear bearings, oil motor, clean commutator, check motor bearings and inspect brushes, test and clean all electrical contacts, adjust and inspect belts and pulleys, clean furnace, leave 10 shear pins on job if shear-pin type stoker is serviced.
16-S = Clean (vacuum), spray inside hopper, change oil, and re-cement retort if needed.

Most Needed Civilian Products

CONSIDERABLE publicity has appeared in newspapers relating to the survey made by Office of Civilian Requirements to determine what "hard goods" are most needed by civilians and what the prospects are for increased production of these items. So far as the warm air heating and sheet metal industries are affected this OCR survey does not indicate any great change in present OCR policies. In order that readers may understand our status the full tabulation of needs as presented by OCR to WPB has been studied and the following tabulation is presented to show possible production by quarters and scheduled production in the third quarter.

Product	Unit of Measure	Level I* Minimum Amount Required If Production is Not Restricted	Level II* Minimum Amount Required if Distribution is Free	Level III* Minimum Amount Required if Distribution is Controlled	Estimated Production 3rd Quarter
Evaporative Coolers	Unit	100,000	?	35,000	0
Oil Floor Furnaces	Unit	5,637	2,750	—	0
Class B Oil Burners	Unit	69,145	30,042	12,335	0
Class B Stokers	Unit	75,000	37,500	—	0
Domestic Oil Tanks	Unit	83,102	44,000	44,000	12,500
Gutters, Spouts, etc.	Lin. Ft.	33,556,000	22,600,000	19,600,000	9,667,000
Gas Floor Furnaces	Unit	47,500	20,000	7,500	10,000
W.A. Dist., Equipt.	Tons, Steel	25,000	18,000	11,000	13,530
Furnaces—C. I. & Steel	Unit	55,000	55,000	40,000	42,000
Coal Water Heaters	Unit	96,000	96,000	96,000	91,000
Fractional Motors	Unit	?	?	150,000	150,000

*Level I represents minimum essential requirements, assuming controlled distribution through rationing or some similar system so that products actually get to those specific people or uses for which we programmed them. Level II might be called a "squeeze" level; it represents minimum essential requirements, assuming no control on distribution; in other words, a short supply on the market but sufficient so that people can find the products they want if they shop around enough. Level III means an unrestricted supply of products, in terms of quality products in unrestricted lines. We say "unrestricted supply" instead of "unrestricted demand" because although we estimate what unrestricted demand would be, we try to be practical and qualify that figure by the probable production of the industry.

SHEET METAL SECTION

DEVOTED TO SHEET METAL CONTRACTING AND FABRICATING

THE OPEN DOOR

to Complete Service in

QUALITY STEEL

CHICAGO STEEL SERVICE COMPANY

ASHLAND AVE. AT 39th ST.
CHICAGO 9

The House of Stainless

TELEPHONE LAFAYETTE 7210
ILLINOIS

Product and Production Engineering

By Ernest E. Zideck
Sheet Metal Consulting Engineer

IN the April issue of AMERICAN ARTISAN we showed and described a Sheet Metal Shop Layout for Manufacturing and General Operations. That layout is the result of much pre-war, sheet metal fabricating experience supplemented by experience in many war plants.

That same arrangement of raw materials stock, the six fabricating departments or sections, the assemblies and finishing and finished product storage is just as adaptable to the smaller shop doing general sheet metal work, blow pipe and industrial, heating-air conditioning duct work and all other work which must be done by shearing-cutting the metal, provisioning it in advance of forming, forming it by brakes, presses, rolls or other means, fitting it and seaming, riveting, soldering or welding it, and assembling the parts or subassemblies to be ready for shipment or installation. The Plating-Color-Finishing Department shown in the Layout might not be used by every sheet metal working establishment, but one never knows what might come along in the way of orders or products, and while building a shop or reconstructing an old one it is prudent to include the department for immediate or future uses.

The best shop layout stocked with the most modern and practical machines and tools and serviced with the most expert help will be of little use, however, if we lack the adequate product and production engineering service which tells the men in the shop "what to do, and how to do it." This applies equally well to the shop working by blue prints and specifications supplied by architects, heating engineers, engineering departments of the customers and other such services, as it applies to the manufacturer of a specialty or a product which he must engineer himself. The difference between the two shops is this: the first shop has the blue prints and the specifications which tell "what to do"; the second shop must provide its own. The first shop still lacks the information of "how to do it." The second shop must supplement the "what to do" with "how to do it." In industry, we call the first service, that which tells us "what to do"—"Product Engineering." The second service, the one that tells us "how to do it," we call—"Production Engineering."

Sub-Contracting a Plane Section

Suppose we have secured a sub-contract for a Plane Under-Wing Section, which is in its entirety a sheet metal job. The section consists of five frames, the frames each made of three pieces, spliced together.

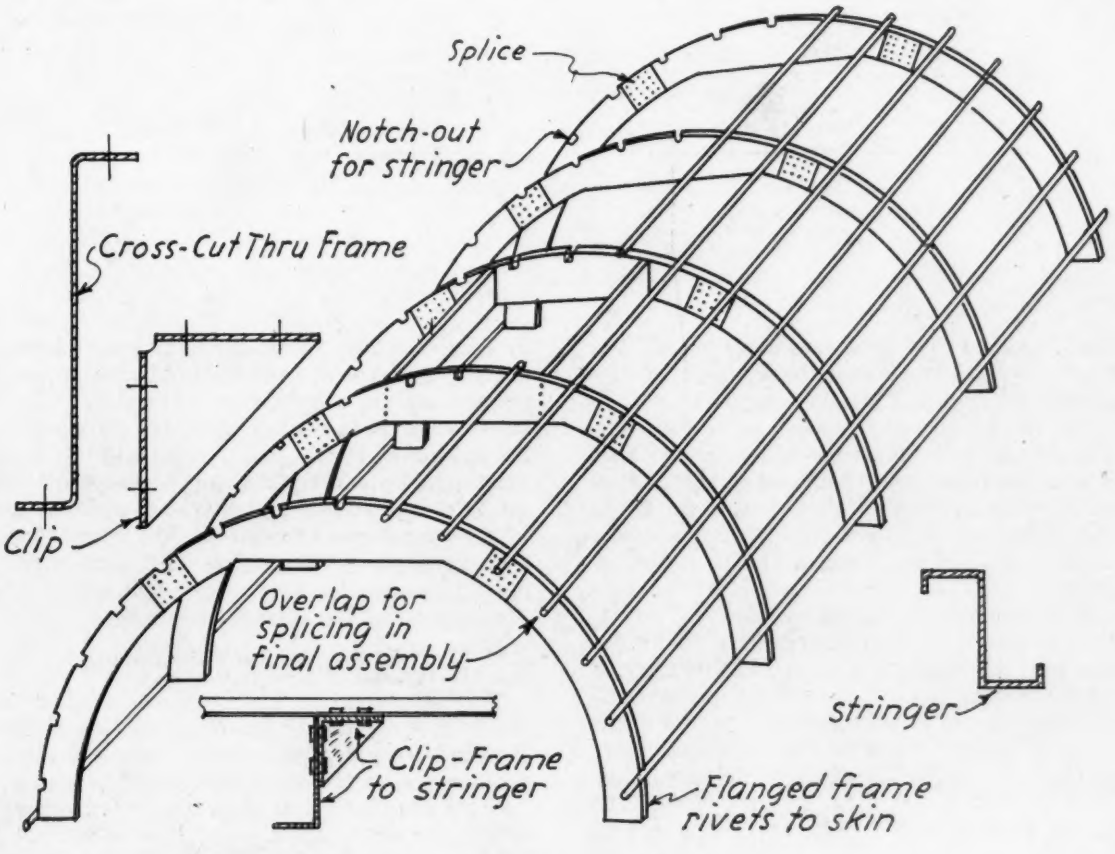


FIG.-1 UNDER-WING SECTION IN CONSTRUCTION

PROCESS SHEET

Date: 5/16-44	Required	Name of Part: CLIP-UNDER-WING	Tool Order	Drawing Number: UW-1864-7-83-5.
Processed by: J. W. Smith	Per Unit 75	Material: .064 ALCL. SHEET, ST.	5/16	Size: 3 x 4
Sequence Number	**Dept. No.**	**Operation:**	**Machine:**	**Tool No.:**
1	5	Select unscratched pieces of scrap left over from shearing frames UW-1864-7-83-2.	Deliver to Shear No. 3. Wheel Bench.	Use Template UW-1864-7-83-T5 for size of pieces wanted.
2	5	Set gages for shearing length of part. Shear, inspect by Template.	Shear No. 3.	Use above Template for setting gage on shear. Inspect by Template.
3	5	Set gages for shearing width of part. Shear. Inspect by Template.	Shear No. 3.	Use Template UW-1864-7-83-T5 for setting gages. Inspect by Template.
4	15	Inspect sheared parts. Reject inaccurate or deep stratched parts. Deliver accepted parts to Dept. 4.	Wheel Bench.	Use Template UW-1864-7-83-T5.
5	4	Stack—Drill rivet (4) .125 holes. Burr sharp edges.	Delta No. 2.	By Template UW-1864-7-83-T5.
6	15	Inspect holes and burring. Deliver accepted parts to Dept. 3.	Wheel Bench.	Use Template UW-1864-7-83-T5.
7	3	Set Gage for Notchout. Notch. Inspect by Template. Notch ends.	Std. Dies. Punch Press No. 6.	Use Template UW-1864-7-83-T5.
8	15	Inspect Notchouts. Deliver to Dept. 2.	Wheel Bench.	UW-1864-7-83-T5.
9	2	Set Gages by Template. Adjust Dies for Radius of Bends. Adjust Brake for Degree of Bend. Inspect (5) formed parts by Template. Form all parts, 2 flanges.	Press Brake No. 3. 3/32 Rad. "V" Die.	UW-1864-7-83-T5. UW-1864-7-83-T6.
10	15	Inspect formed Parts. Deliver accepted parts to Dept. 12.	Wheel Bench.	Use Template UW-1864-7-83-T6.
11	10	Acid dip.	Tank.	AD Instruction Sheet.
12	12	Prime (1) Coat XXX-O-ML.	Spray Booth.	ML Instruction Sheet.
13	15	Inspect Finish. Deliver to Dept. 7.	Wheel Bench.	ML Instruction Sheet.
14	7	Identify Parts with Part Number. Deliver to Stores.	Bench, Plate, Stencils. Wheel Bench.	UW-1864-7-83 Part 5.
15	16	Receive and Stock. Report to Production Office Number of Parts Received and Stored.		Production Sheet. Shortage Noted.

The frames, made of .064 thickness sheet metal, are 6 inches wide, radial, following the contour of the bottom side of the plane. (See drawing). The outer portion of the frame is provided with notch-outs into which fit horizontal reinforcements called "stringers." Both the outer and the inner portions of the frames are provided with flanges. To the outer flange is riveted the "skin" of the plane. To the inner flange fastens a kind of "flooring," which is not a part of the subcontracted section. In the middle of the Section, the size of which is approximately 10x15 feet, between the second and third frames, is a 30 by 36-inch opening in the skin for a door. The opening is framed at the 36-inch ends, these end-frames connecting to the main frames and the ensuing corners filled-in with radially shaped pieces of metal. The stringers are brake-formed metal strips of .064 thickness. They fasten to the frames by clips, brake-formed. The stringers are riveted to the skin, the rivets spaced one inch apart.

Obviously, the subcontractor in this instance works by drawings and specifications supplied by the engineering department of the plane builder or, under the present set-up, the "parent-contractor." In this instance, the Product has been "engineered," and all the subcontractor must do is to build the Section exactly as shown in the drawings and as specified. The job is comparatively a simple one, with the exception of the four corners completing the door frame. These four corners, owing to the fact that their flanges must rivet to the outer skin, will prove a difficult proposition for the subcontractor.

Production Engineering

The subcontractor has been allotted the sheets of which to build the Under-Wing Section of the Plane. He has been given priority for tools and machines as required to do the work. But, will he go ahead cutting up the sheets and start the work by merely looking at the drawings supplied him?—Not so! He will have competent men scrutinize the drawings one by one, section by section, frame by frame, stringer by

stringer, clip by clip, each skin section by itself, every single piece of metal that goes into the structure separately, and determine in advance "how to" shear the piece, cut it to shape, provide notchouts and holes in it, form it to shape, sub-assemble the pieces, do the final assembly work. This, then, is Production Engineering, in part. The other part consists of the pre-determination of machines and tools and means by which the above is to be done. And, in which sequence the operations are to be done.

The "Process Sheet"

The above work is compiled on sheets of paper, called "Production" or "Process Sheets." Each single piece of metal, each part, large or small, has its own Process sheet. A mere clip, a piece of metal salvaged from scrap left over from shearing the "frames," has a "process sheet" that differs not much from the sheet telling "how" to proceed with the largest "skin" section going into the construction. The Process Sheet not only tells how to shear the clip, how to provide holes in it, how to form the flanges to it, how to notch it to fit the other parts, how to "finish" it before it can be used; it also tells what machine to use to shear it, what machine or tool to use to do the notchouts, what machine or tool to use to provide the rivet holes in the flanges, by what means to form the flanges and in what manner and by what means to treat the piece to make it ready for sub-assembly. Usually, in aircraft work, the separate pieces or parts are coated with paint or "primed" before being riveted to another piece or part. And, before "priming" can be done, the piece must be "anodized" or dipped in acid, to insure the paint sticking to the metal. A sample "Process Sheet" is reproduced here, showing how each single piece or part must be treated and its production determined in advance of actual work being done.

The above illustrates what is meant by telling "how to do it." With such Process Sheets covering each part, from smallest to largest, the Production Office which receives one Copy of each attaches the copy to the Production Order telling "how many" of the pieces or parts to produce. The Production Office also computes the amounts of materials needed for the certain number of pieces, and issues Material Requisitions for same. It also requisitions the special tools needed, mostly templates, as shown in the Process Sheet above, and these tools are delivered, together with the materials and the Process Sheet to the foreman or superintendent in charge of production.

There are special Process Sheets written for each sub-assembly, no matter if it be only for a couple of rivets tying together two small parts. In these Process Sheets the Parts to be assembled are named by Numbers, the size and kind of rivets are specified, the tool to use in riveting is named, the place in which the work is to be done is determined, identification of the sub-assembly by number is provided for, the storing of the sub-assembly for future use is all set. In a well systemized Production Engineering NOTHING is left to guessing at, or arguing of how this or that could be done and by what means it could be done. And although no Production Engineering is perfect and infallible, it is far better to have this system in production than to have none. Eventual corrections in the "process" are incorporated to suit shop conditions.

Product Engineering

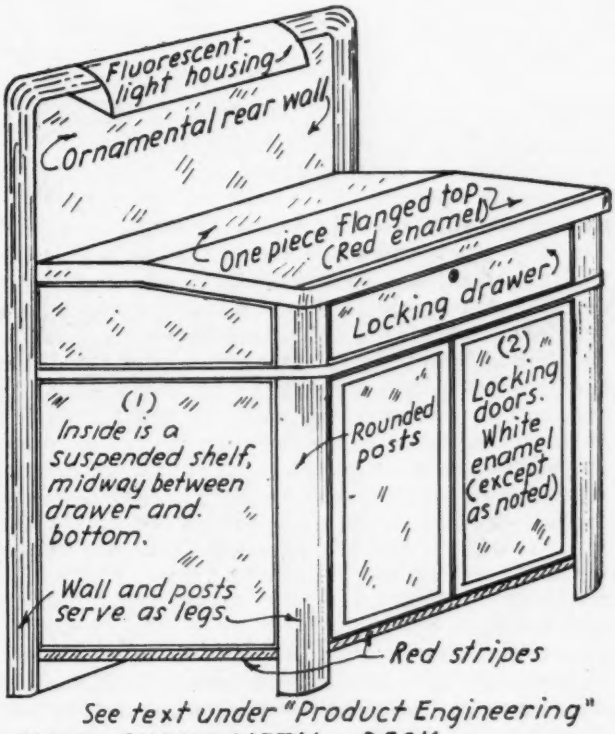
We started out by pointing out that the best conceived and equipped shop is of little good if we have no "system" in utilizing it to capacity. The foregoing Production Engineering phase of successful manufacturing is but one of the requirements. In the post-war era ahead of us there will be plenty of "Product Engineering" necessary to be done by the manufacturer or shop owner himself. Many shops are considering "new products" to manufacture and distribute as soon as the materials are released and conditions warrant.

Product Engineering Is Saleability

The engineering of a New Product has been (or will be) preceded by PLANNING such a New Product. In civilian production, in the manufacture of goods for the public, for the market, Planning undoubtedly consists also of SALEABILITY (at a Profit) of the product. Irrespective of how useful and needed the product-in-contemplation may be, and of how well-made it is planned to be, and of how extensively advertised and promoted it will be, the fact remains that the product will not sell if it is *priced too high* for the public to afford it.

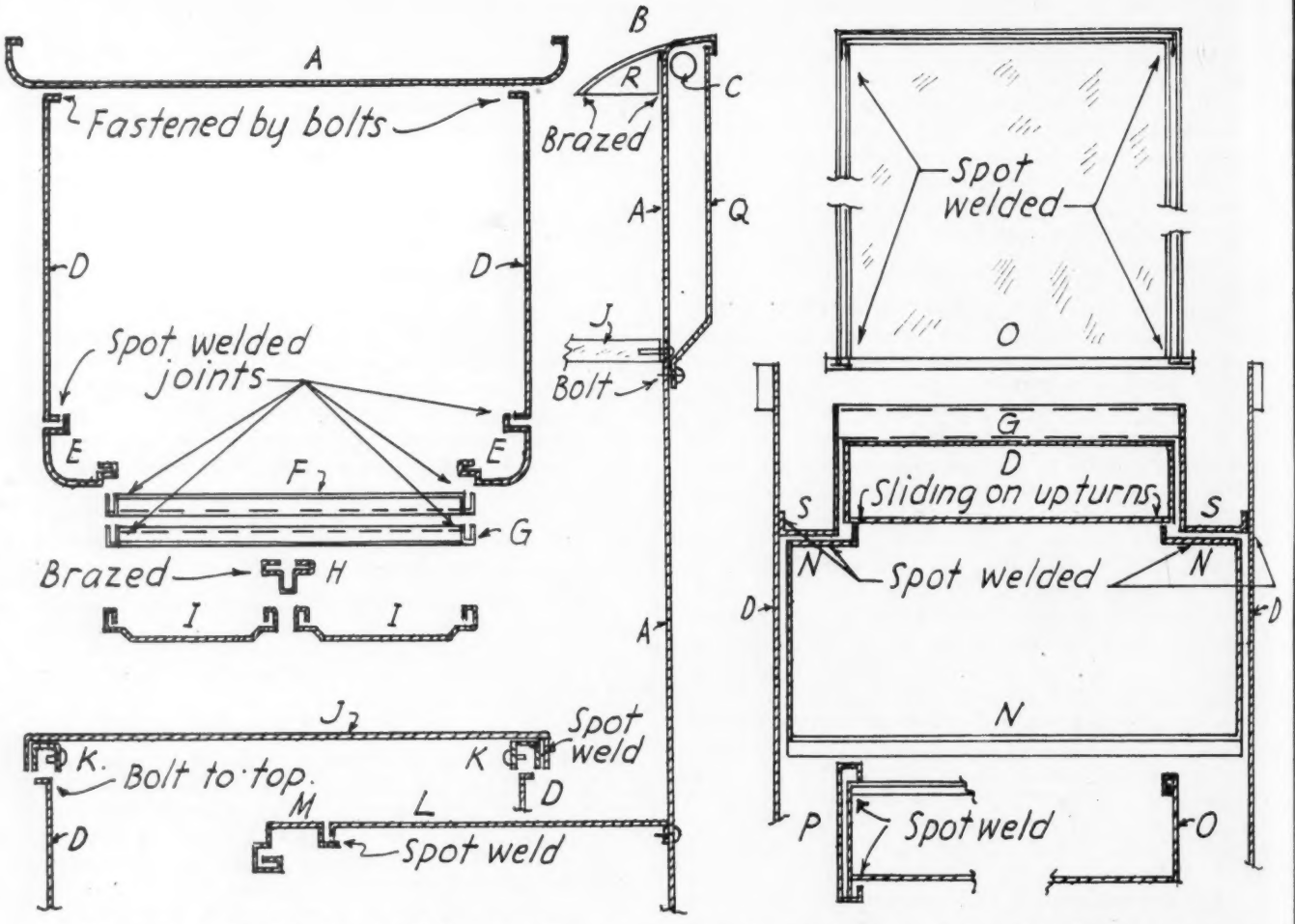
Here steps in Product Engineering. A product, essentially the same in all respects, *can be poorly engineered and its production cost be high, or it can be well engineered and its production cost be cut down to one half or less.*

The engineering of a Product that is to meet competition; or that is to sell at a price at which the public will buy; or that is to be fabricated of sheet metal while it can be produced of castings or at least partly molded of plastics; such engineering requires ingenuity indeed. But more than that, it requires knowledge of the MEANS by which the product can be produced, well made, at a low cost of production. Low cost of production commands that all intricate work, necessitating sensitive machinery and highly


Fluorescent light housing
Ornamental rear wall
One piece flanged top (Red enamel)
Locking drawer
(1) Inside is a suspended shelf, midway between drawer and bottom.
Rounded posts
(2) Locking doors. White enamel (except as noted)
Wall and posts serve as legs
Red stripes

See text under "Product Engineering"

FIG. 2 SHEET METAL DESK



A = Wand, C = Fluor. light, Q = Cover, J = Desk top, EE = Posts, F = Support, B = Housing top, G = Top support, H = Door support, II = Doors, KK = Channels, R = Housing ends, L = Bottom, M = Bottom front, N = Shelf, O = Drawer, P = Drawer front, SS = Drawer supports.

FIG. 3 BREAKDOWN

skilled help, be eliminated, or reduced to an absolute minimum. The best Product Engineer is one who has had sufficient Production Engineering experience to foresee the difficulties of production under circumstances at hand, and steers clear of them.

In Fig. 2 is shown a Desk made of sheet metal. In Fig. 3 is the Desk "broken down" to its component parts; Fig. 3 should be supplemented by a few small details, adding hinges, locks, bolts and similar items. The "breakdown" shows the product engineered for quantity production, the entire cost of materials, labor, shop supervision and shop overhead, with the Desk enameled white, the desk top enameled red, a red bottom stripe, a plated strip on spotwelded retainer hiding the spotwelds of parts SS shown in the breakdown—the total cost is $16.80 per unit. The job is ninety per cent spotwelded construction. Shearing and press-braking are ninety-five per cent of all machine operations. Five per cent consists of punching or drilling bolt holes, but there is not a single bolt seen in the exterior desk. All bolts are on the inside and through the rear wall, the "wand." Brazing is done sparingly, on parts B-R and top of A, and post H, and transverse parts F, G. Parts SS are flanged in front and rear to fasten to E and A. Part N is flanged inward on the sides, bolting to flange of D, E. The rear of N is flanged inward and the flanges fasten to A by bolts.

It will be noted in the breakdown that the Drawer, O, slides on upturned edges of NN, the edges being doubled. The SS parts hold the drawer in its central position, and its sliding over the edges of NN is made easy even though there might be heavy materials or supplies inside. A doubled metal strip, with flanges upturned, connecting G to A, prevents the drawer from tipping downward when drawn forward. The construction of the desk is such that, after finishing off the welded spherical corners on top of A, the brazing on BRA, the corners on J, the welded corners on II, and a few other spots, the exterior cabinet shows no spotwelding marks except at the extreme bottom of DD, which are hidden by the red stripe painted there. The white enameled structure, with the red top and the plated strip running from A to A, presents a highly pleasing appearance throughout.

In the next instalment of this series we shall show a sample chart listing the components of this Desk one by one and "engineering" each from the draftsmen and on through blue prints to the Production Department.

Are You a "Holder?" If So, Here's How You Determine Your Selling Prices

ANY person who acquires iron and steel products for any purpose other than resale but who, nevertheless, resells such products in substantially the same form as purchased is, under Revised Price Schedule No. 49, Amendment 23, Effective June 1, 1944, known as a "holder."

For example, if you have purchased iron or steel products for use in manufacturing some commodity, and you now wish to dispose of an excess stock of these iron and steel products, the sale must be made in accordance with this Amendment.

On any sales of excess iron or steel products by holders, the ceiling price delivered to the buyer is the sum of:

1. The **mill base price** to the holder subject to **differentials plus**

2. Rail rate of freight for the quantity sold by the holder, from the governing basing point to the place where the holder now has the material **(generally, holder's incoming freight from his closest basing point) plus**

3. Actual transportation costs paid for delivery from the holder's location of material to destination **(holder's outgoing transportation cost for shipment to his customer,** that is, rail, truck or other means of transportation used).

(Note: The sum of items 1 and 2 above is, in effect, the holder's ceiling price f. o. b. his location. Item 3 permits him to pass on any outbound transportation costs which he pays.)

Quantity Differentials

Any quantity **extras** may not exceed the mill quantity extras established in Revised Price Schedule No. 6 for the quantity sold by the holder.

Any quantity **deductions** may not be less than the mill quantity deductions established in Revised Price Schedule No. 6 for the quantity sold by the holder.

All extras and deductions must be determined by the total quantity ordered in one day from the holder by one person for shipment to one destination.

Note: The quantity differential you use for calculations is determined by the quantity which you **sell.** You **disregard the quantity differential which you paid** when purchasing the commodity in question from your source of supply.

Any other extras may not exceed the mill extras established in Revised Price Schedule No. 6. An extra may be added only if the holder paid such an extra to his source of supply and the holder can identify the material as the material for which he paid the extra.

Any other deductions may not be less than the mill deductions established in Revised Price Schedule No. 6.

1. **Rail rate of freight** means the lowest filed or published rail tariff rate for the shipment of material included in the order to be shipped, plus 3% of such rate.

2. **Governing basing point** means the established basing point the use of which results in the lowest delivered price to the holder's location of material.

3. **Destination** means the place at which the material is required for the buyer's operation.

If a holder is both a fabricator (manufacturer) and distributor of iron and steel products:

Any material of the same product group and type which he is permitted to purchase from a producer or other distributor for resale under the provisions of War Production Board orders M-21-b-1 (effective August 16, 1943) and M-21-b-2 (effective November 4, 1943) is not considered excess stock and is not covered by the appendix established by this Amendment to RPS 49.

Hot Rolled Sheets.—Example

A holder in Cleveland, Ohio, sells 15,000 lbs. of 16 gauge hot rolled sheets, 48" x 120" to a purchaser in St. Louis, Missouri. The shipment from buyer to holder is made by rail.

Per 100 lbs.

$2.10	Base Price Cleveland (see pp. 4 and 5 of this bulletin)
.0833	Switching charge (Basing point delivery)
.45	Size and gauge
.5253	Less-than-carload freight Cleveland to St. Louis
$3.1586	Ceiling price for 100 lbs. delivered at St. Louis, Missouri.

Note: 1. **The freight factor** used for Cleveland delivery is the less-than-carload switching charge for delivery at a basing point.

The less than carload switching charge within the basing point is 10c per 100 lbs. but in no case to exceed the $12.50 carload charge ($12.50 divided by 15,000 lbs. equals 0.0833 per 100 lbs.).

2. **Freight "collect."**—If shipments are made by holder to buyer on a "collect" basis, you omit freight from Cleveland to St. Louis, and the ceiling price would be $2.6333.

QUANTITY DIFFERENTIALS
(Rate per 100 pounds)

Hot Rolled Sheets, Cold Rolled Sheets and Long Terne Sheets

(a) **Order Quantity Extra**

Less than carload lots of standard and odd sizes:

Less than 7,000 pounds.....$0.25

If the total of all flat rolled items including roofings and sidings, constitutes a carload quantity, extras for less than carload quantities do not apply. On less than carload shipments the total weight of each class of sheets constitutes the order in determining the quantity extras to apply.

(b) **Item Quantity Extras**

2,000 pounds and over..... Base
Under 2,000 pounds to 1,000 pounds, inclusive.$0.50
Under 1,000 pounds..... 1.00

Quantity extras are determined by the total weight of a size (one gauge or thickness, one width, and one length) of one grade, one analysis, and one finish,

(*Continued on page* 106)

Fairlington { 23,000 Squares of Roofing 1,000,000 Pieces of Flashing

THERE have been housing projects and more housing projects—certainly one of the most impressive as well as one of the largest and most substantial is Fairlington in Arlington County, Virginia, across the river from Washington, D. C., where the J. Edward Linck Sheet Metal Works of Philadelphia and Washington contract included all roofing and sheet metal work for 513 buildings comprising 3,456 living units; Linck construction beginning in June of 1942 and just finished a few weeks ago.

This is a project of the Defense Homes Corporation for Washington war workers. The architect is Kenneth Franzheim of New York and Washington, with Allan Mills of Washington, associate, and the builder is Thompson Starrett Co., Inc., of New York and Washington.

The quality and the size of some of the individual—and typical—buildings in Fairlington (which was known as the Seminary Heights Project during construction) is best conveyed by the photographs. Some idea of the size of the Linck contract is indicated by Robert Linck's time sheets which show employment of some 63 slate roofers, 78 roofers' laborers, 16 sheet metal mechanics, 6 sheet metal laborers, 2 superinten-

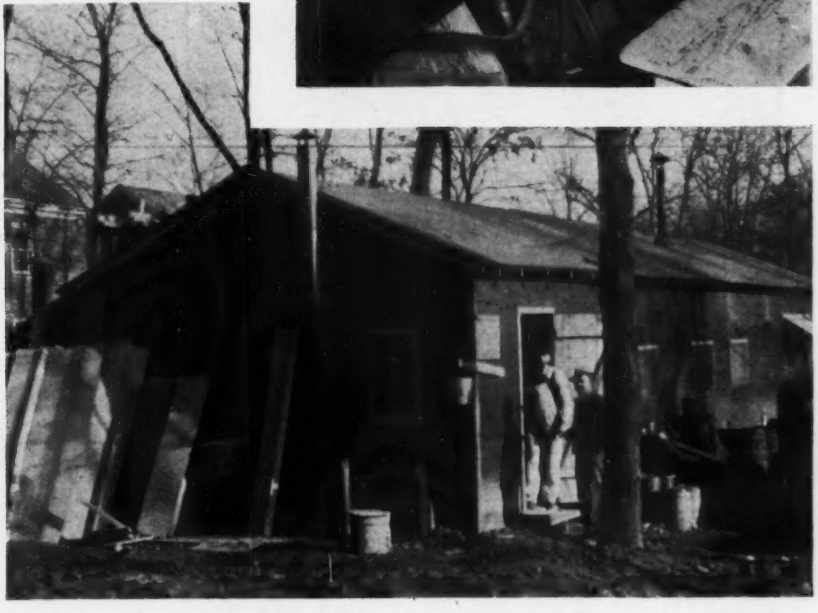
Progress construction views of scaffolding in place for carpenters to lay gutter and roofers to lay first three courses. Roofers used own brackets and planks for rest of roof and flashings.

dents, 3 office workers during much of the contract.

As to materials, the records show: total slate roofing, 19,389 squares; total clay tile, 644 squares; total asbestos shingle roofing, 2,072 squares; total built-up roofing, 1,153 squares. For sheet metal reglets, 2,000 gallons of caulking compound and many times this amount of slater's cement for the roofing. Approximately one million pieces of sheet metal flashings were fabricated, painted and placed; records show over 266,000 square feet of sheet metal, mostly 26 gauge, galvanized, painted two coats. To lay the slate some 840 kegs of nails (galvanized) were used.

Roofing

The amount of material used and the roofing crews employed are given above—the figures indicating that most of the roofs are slate, consisting of both Pennsylvania black and Vermont colored slate in numerous sizes. The asbestos shingles are varigated in color and the architects interspersed colored asbestos shingled



In the Linck field shop (lower, right) more than one million pieces of flashing, plus thousands of metal specials were sheared (lower, left); then formed (upper, right); and the flashings were given a prime dip coat of paint (upper, left).

Rising wall flashings and chimney flashings were cut and formed and painted in the field shop in sizes and shapes shown above. 2,000 gallons of caulking compound were used. After erection, each piece was given an "in place" paint coat. Note—Porch metal spout from wood gutter (lower, right) and no downspout.

roofs with the slate roofs to obtain a pleasing contrast and lend individuality to the project's appearance.

To erect the roofing this procedure was followed: Steel scaffolding from the ground to the eaves was supplied by the general contractor for the erection of the wood cornice and the wood gutters. A sub-contractor for scaffolding was used. As soon as the carpenters were finished, Linck roofing crews moved onto the scaffolding and laid three courses at the eaves. Then the scaffolding was removed and erected elsewhere. The roofing crews then used their own brackets and planks to lay the rest of the roof. The steps in this procedure are pretty well shown in the photographs. Usually a building was scaffolded on two sides at one time.

On hips and ridges, Linck used a double thickness of 40-pound felt; then the slate or shingles were laid in slater's cement and mitred in "fantail" style. Metal flashings were not considered necessary here. Two thicknesses of felt and sheet metal were used at the valleys between dormers and main roof and between gables and main roof. All shingles were laid with a 3-inch head lap.

Flashings

A very substantial portion of the man-hours spent on the job went into the fabrication, painting and installation of the flashings. As stated before, probably one million pieces of flashing were cut, formed, painted, installed and caulked. The photographs of

complete housing units show that flashing was used on all chimneys, at the base of all rising walls between units of different heights, on all porch roofs and on parapet walls.

The coping cap flashing (parapets) was made of 26-gauge galvanized steel, shop painted and then field painted. It was laid on the wall (see photograph) in 8-foot lengths, lapped 3 inches with caulking compound in each lap joint. Later the precast stone coping held it in place. The metal cap extended 4 inches into the wall and 4 inches down over the felt flashing with a folded edge along the bottom. The wall flashing was standard felt flashing with the outer ply of felt consisting of a heavy slate surfaced felt set in mastic.

Several job shop photos show steps in the fabrication of the rising wall flashing. The metal is 26-gauge galvanized steel which was sheared to size and shape formed in a small hand brake and dip painted in the shop. The first paint coat was zinc dust paint; the final coat was similar and was applied after erection. Fabricating, dipping and air drying a million pieces kept the crew busy.

In erection on rising walls and chimneys, the metal shingle flashing was inserted under the slate or shingles according to standard practice; then the cap piece was lead plugged into the reglet and one nail was driven through the cap edge into the reglet of the cap piece below. The photographs show a stiffening bend made on vertical edges of the cap pieces. Says Robert Linck: "This 266,000 square feet of metal flashing represents a small percentage of the metal which might have been used, had it not been necessary because of material restrictions to eliminate as much metal as possible from the design."

Gutters and Downspouts

As stated, the gutters on these buildings are wood, installed by carpenters. The downspouts were also wood—California redwood—with inside measurements 2½ by 3 inches. The splices in the downspouts were made by allowing the front and back sections, which were longer than the sides, to extend into the next piece, thus providing a rigid construction. Linck did fabricate and install metal tubes and bands. These were fabricated and painted in the field shop.

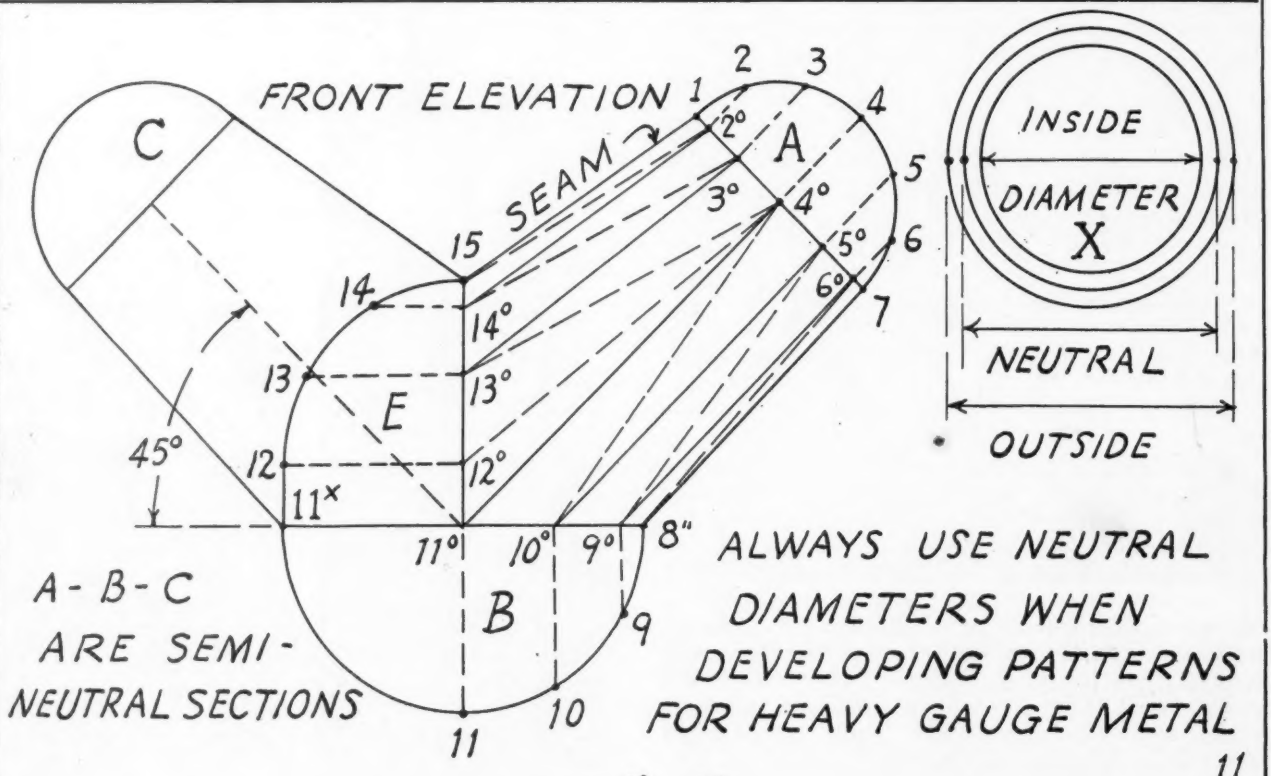
The metal tube extends from the gutter into the spout. This tube was soldered to a metal cap piece which fits over the cross grain of the wood at the top. The photographs show that the wood downspout does not touch the gutter—the gap between is closed by the metal tube which follows the contour of the wood cornice. The bottom of the metal tube (smaller than the downspout) has a cap which fits over the top of

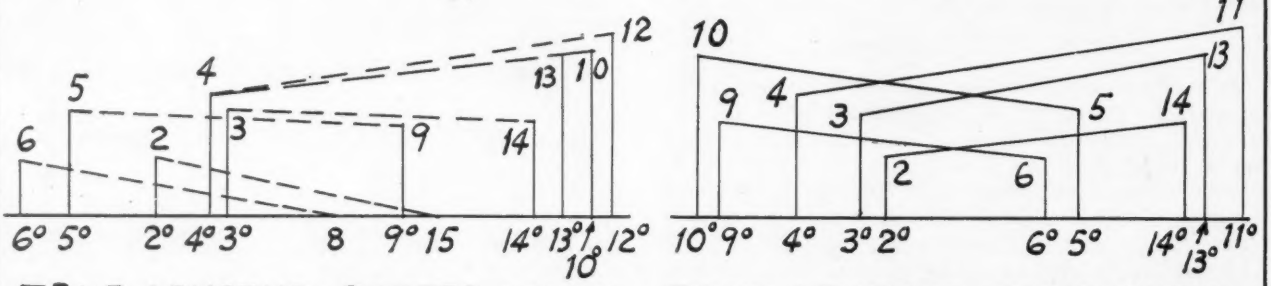
(*Continued on page* 109)

The wood downspouts were strapped with metal (field shop made). The metal tubes (see text) show here.

Left—Parapet cap flashing is two pieces 4″ x 4″ x 8′ with standard felt and heavy slate surfaced wall flashing. Right—Slaters laid hips with a double thickness of 40-pound felt—slate laid "fantail" style.

PATTERNS FOR HEAVY GAUGE Y-BRANCH — CONNECTION WITH MAIN LINE — V ✳





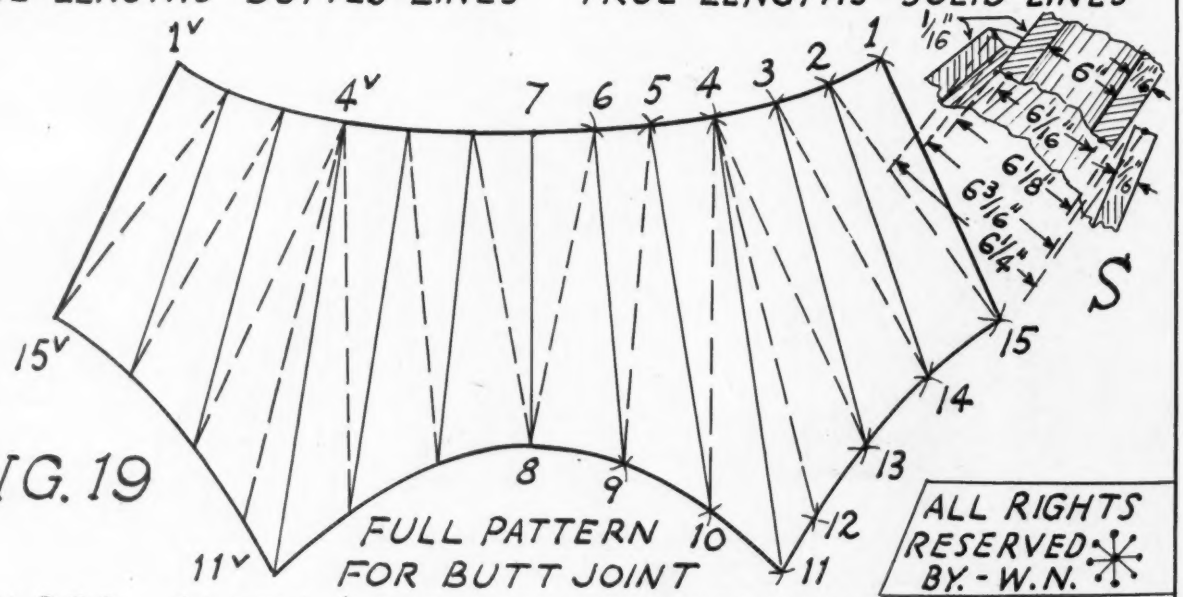


FIG. 19

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WELDED. ALLOW LAPS AND FLANGES FOR RIVETED JOINT.

Pattern Development for

Heavy Gauge Blow Pipe Fittings*

[Y-Outlets from a Main]

By William Neubecker

THIS fifth article will cover the pattern development for a Y-outlet from a main pipe, which was reproduced from the book, Standard Practice in Sheet Metal Work, on Plate No. 10, page 508, published by the National Association Sheet Metal Contractors. This problem and another of different formation will be developed by using the simplified method in triangulation, without the use of a plan and will be described in detail as we proceed. On the full page pattern detail, marked Fig. 19 in the accompanying illustration, is shown the front elevation of the fitting in question.

The usual angle at which the prongs should pitch is 45 deg. as shown in elevation; but they should never be over 60 deg. Assume that the inside diameter of the straight pipe connecting to each prong *A* and *C*, is 6 inches. Proper allowance must now be made, to have the neutral diameters of the prongs correct, so that a snug fit can be made with the straight pipe connecting into the prong inlets. The same applies to the "Y" outlet which must be flanged to connect to the main. Assuming that No. 16 gauge metal, which is 1/16 inch thick, will be used, determine the correct neutral diameters of the prong inlets at *A* and *C*. This is made clear by following the diagram *S* on the detail drawing. If the inside diameter of the pipe is 6 inches, and 1/16 inch thick metal is used, then $6 + 1/32 + 1/32 = 6\ 1/16$ inches the neutral diameter of the pipe. $6\ 1/16 + 1/32 + 1/32 = 6\ 1/8$ the outside diameter of the pipe. Now allow 1/16 inch play for an easy slip joint, then $6\ 1/8 + 1/16 = 6\ 3/16$ the inside diameter of the "Y" inlet. Then $6\ 3/16 + 1/32 + 1/32$ equals 6 1/4 inches the neutral diameter of the prongs. The height of the center joint line between the two prongs is equal to *11°-15* which is greater than the radius of the main.

Having established the height at point *15* in elevation, the true semi-neutral section on the joint line *11°-15* can be drawn as follows: Take the radius *8-11°* in the neutral quadrant section *B* and set it off on the joint line *11°-15* in elevation from *15* to *12°*. Using *12°* as center describe the quadrant *15-12* to intersect the line drawn from *12°* at right angle to *15-11°*, at *12*. From *12* draw a perpendicular line to intersect the line *11°-11ˣ* at *11ˣ*. *15-11ˣ-11°-15* is the true semi-neutral section on the joint line of the two prongs.

Areas of Prong Inlets and Neutral Diameter of Main

To avoid computation, the writer would suggest to use, Table of Diameters Circumference and Areas of Circles. As the neutral diameter of the prong is 6¼ inches, follow the diameter column in the table to 6¼, then horizontally to the Area column to find 30.67 the desired area. $2 \times 30.67 = 61.34$ sq. in. for the two prongs. Now follow the Area column to the nearest number to 61.34, which will be 61.86. Follow this number horizontally back to the Diameter column, which gives 8⅞ inches for the neutral diameter of the main outlet *B*, whose area will be equal to the combined areas of the two inlet prongs *A* and *C*.

How to Find Bases of Sections

Having drawn the front elevation with their proper neutral diameters, place the semi-neutral sections of the prongs *A* and *C*, and the semi-neutral section of the main *B* including the semi-neutral section on the joint line as indicated by *E*, in their proper positions as shown. Now space these semi-neutral sections and neutral quadrant in equal divisions as shown by the small figures *1* to *7* in *A*, *8* to *11* in *B* and *11ˣ* to *15* in *E*. As both prongs are similar in regards to pitch and diameters, only the right prong has been used in developing the pattern shape. If either prong had a different pitch or different diameter, then similar procedure would be required as that which will follow.

From the small divisions *2* to *6* in the semi-neutral section *A*, draw lines at right angles to the diameter line *1-7* to intersect this line as shown from *2°* to *6°*. In a similar manner at right angles to the diameter line *8-11ˣ* and the joint line *11°-15*, draw lines from the divisions *9* and *10* in the neutral quadrant section *B* and from the divisions *12*, *13* and *14* in the neutral quadrant section *E* to intersect the diameter line of the neutral quadrant section *B* and the joint line of the neutral quadrant section *E* at *9°* and *10°* also at 12°-13° and 14° respectively. Now connect opposite points by solid and dotted lines as shown. These lines then represent bases of sections to be constructed, whose altitudes will be equal to the perpendicular heights, drawn at right angles to the diameters and section line in the neutral sections *A-B* and *E*.

For example, to find the true length of the solid

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line *4°-11°* in elevation, place this distance on the horizontal line below, as shown by similar numbers *4°-11°* in the diagram of true lengths of solid lines. From these two points erect the perpendicular lines *4°-4* and *11°-11*, equal respectively to the distance *4°-4* in the semi-neutral section *A* in elevation and *11°-11* in the neutral quadrant section *B*. Draw a line from *4* to *11* in the diagram of true lengths of solid lines, which will be the true length of the line *4°-11°* in elevation.

In a similar manner, obtain the true length of the dotted line *3°-14°* in elevation. Set off this distance as shown by *3°-14°* in the diagram of true lengths of dotted lines, and from these two points *3°* and *14°* erect perpendicular lines, making 3°-3 and 14°-14 equal respectively to the distance *3°-3* in the semi-neutral section *A* and *14°-14* in the neutral quadrant section *E* in elevation. Draw a line from *3* to *14* in the diagram of true lengths of dotted lines which will be the true length of the dotted line *3°-14°* in elevation. Proceed in this manner until all of the true lengths are found, as shown by similar numbers in both true length diagrams and the neutral sections in elevation.

Developing the Pattern Shape

The full pattern can now be developed. As the seam is desired along *1-15* in elevation, take the distance *7-8* in elevation (which shows its true length) and place it as shown by *7-8* in the pattern; using *7-6* in the semi-neutral section *A* in elevation as radius and *7* in the pattern as center, describe a short arc near *6*, which intersect by an arc struck from *8* as center, with *8-6* in the dotted true lengths diagram as radius. Now with *8-9* in the neutral quadrant section *B* in elevation as radius and *8* in the pattern as center, describe a short arc near *9*, which intersect by an arc, struck from *6* as center, with a radius equal to *6-9* in the solid true length diagram. Continue in this manner, using alternately as radius, first the proper numbered division in the same neutral section *A* in elevation, then the proper numbered true length, taken from the diagram of *dotted* true lengths; the proper numbered division in the neutral quadrant, section *B*, then the proper numbered true length, taken from the diagram of *solid* true lengths, until the line *4-11* in the pattern is drawn. The same procedure is continued, excepting that the divisions along *11-15* in the pattern, are obtained from the proper numbered divisions in the neutral quadrant section *E* in elevation, until the line *15-1* in the pattern is drawn, which is equal in length to *15-1* in elevation (its true length). Then will *1-7-8-11-15-1* be the one-half net pattern shape.

If the pattern is of such a size that it can be laid out in one piece, without waste, then simply transfer the right half of the pattern opposite the center line *7-8* as shown by similar numbers which will be the full pattern shape for butt joint welded. If the "Y" branch is to be riveted allow laps around the entire pattern and use the intersecting points *1-2-3*, etc., for punching rivet holes, similar to the pattern shape shown in Fig. 10 in the September, 1942, issue of American Artisan on page 56.

Y Developed by Simplified Triangulation

Another type "Y" of a different formation and intersection is shown in Fig. 20 in the additional detail marked[1] which can also be developed by the simplified method in triangulation without the use of a plan. Note that the inlets and angles of the prongs are unequal. Geometrically, this type of "Y" shows the intersection between a right and a scalene cone, whose bases are equal to the full diameter of the main, as shown by *M-N*. The true joint or intersection line between the cones is obtained by drawing a line from the intersection of the cones at *V* to the center of the main at *W*. Only the true section on this joint line *V-W* in the right cone (which will have the form of a parabola) will be developed.

In Fig. 21 in the pattern detail is shown an enlarged elevation of the "Y" in question, where *A-B-C-D* is the right cone and *C-D-E-F* the scalene cone, both being placed in their desired position, in reference to neutral diameters of the outlet, inlets and angles. Draw the semi-neutral sections on the inlet lines of the prongs *A-B* and *E-F* as shown, also the semi-neutral section of the main outlet *D-C*. No attempt will be made to develop these two prong patterns (as this has already been explained in connection with the pattern detail in Fig. 19) but only to show in Fig. 21 how to obtain the parabola form section on the joint line *H-6*. Very often in practice, this section on the joint line *H-6* is drawn at pleasure. Knowing the distance *6-J*, which is obtained from *6-6°* in the neutral main section, an approximate parabolic form is drawn from *J* to *H*. It is very seldom that this method comes out true and correct and the result is, that the right cone is pressed to fit the approximate pattern section.

Developing True Parabolic Section

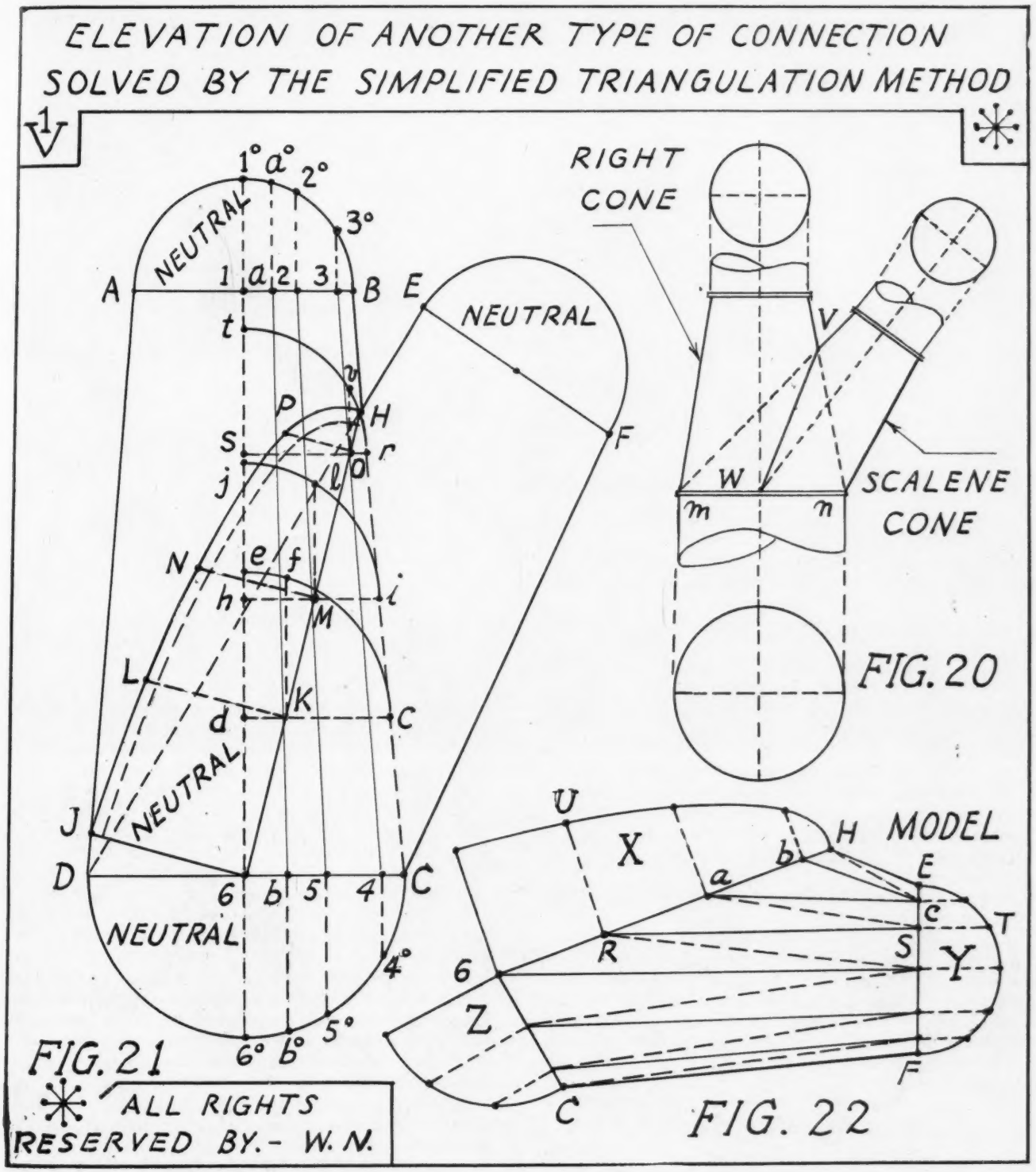
A true accurate pattern or section on the joint line *H-6* when a right cone is used, can easily be developed without the use of a plan as follows: Space the one quarter neutral inlet section on the line *A-B* in the right cone in equal divisions as shown by *1°-2°-3°* and *B;* also the one quarter neutral section on the outlet line *D-C* as shown by *C-4°-5°* and *6°*. Introduce extra points where required as shown by *A°* on the inlet neutral section and *b°* on the outlet neutral section. From these small letters and numbers draw perpendicular lines to intersect the line *A-B* at *1-a-2* and *3* and the line *C-D* at *4-5-b* and *6*. Connect these points as shown by the joint lines in the elevation of the right cone.

Now where these lines intersect the joint line *H-6* at *K-M* and *O*, draw the horizontal lines *c-d, i-h* and *r-s* respectively, intersecting the center line of the cone at *d-h* and *s*, which use as centers for describing the quadrants *c-e-, i-j* and *r-t* respectively. These quadrants represent the one quarter neutral sections on the lines *d-c, h-i* and *s-r*.

From the intersection *K-M* and *O*, on the joint line, erect perpendicular lines to intersect the quadrant *c-e* at *f;* the quadrant *i-j* at *l* and the quadrant *r-t* at *v*. Now at right angles to *H-6* from intersections *6-K-M* and *O* erect lines, making *6-J* equal to *6-6°; K-L* equal to *K-f; M-N* equal to *M-l* and *O-P* equal to *O-v*. Through points of intersections so obtained, trace the parabolic curve *J-L-N-P-H*. This semi-neutral pattern doubled over on the line *H-6*, will be the true full neutral section on the joint line *H-6*, from which one half the thickness of metal in use, must be deducted from the pattern (as shown by the dotted line) so that the partition (if desired) will fit on the *inside surface* on the joint line *H-6*.

Obtaining True Lengths and Shapes

In Fig. 22 is shown how the various semi-neutral sections are placed previous to obtaining the true lengths and pattern shape. A reduced reproduction of the scalene cone in Fig. 21, is shown by similar



letters and numbers in Fig. 22. X represents the semi-neutral parabolic section; "Y" the semi-neutral section at the inlet and "Z" the neutral quadrant section at the outlet or main. Note how the solid and dotted lines are drawn previous to obtaining the true lengths. Note also how connections are made when, for instance, there are 4 divisions in the semi-section "X" and but 3 in the semi-section "Y." In such a case, simply connect *a* and *b* to *c*. This is the usual procedure to follow.

Now to find the true length of the solid line *R-S*, erect at *right angles* to *R-S*, the distances *R-U* and *S-T* in a diagram, as explained in the true length diagrams in the pattern details in Fig. 19. Then will the distance from *T* to *U* in the diagram so obtained as in Fig. 22, show its true length for the line *R-S*. Proceed in similar manner for the balance of the solid and dotted lines. Use similar method when developing the pattern for the right cone in Fig. 21.

The rule for finding the areas of the two inlet branches and the diameter of the outlet or main, is similar to the explanation given in connection with Fig. 19 inlets and main.

The pattern shapes for the two branches in Fig. 21 are obtained similar to the pattern shape developed for the "Y" in Fig. 19.

Priority Referral System

THE following Questions and Answers have been given by War Manpower Commission to regional directors to put into effect the labor "Priority Referral System" which became effective July 1.

Q. Will local conditions be taken into consideration in putting the plan in effect?

A. The system will be applied only after consultation with regional and area committees and then to the degree necessitated by regional and national manpower needs.

Q. How does the plan work?

A. It provides that employers in any area, except those in agriculture, may hire male workers only from among those referred by the WMC's United States Employment Service or in accordance with the arrangements approved by the local USES of WMC after consultation with the area management labor committee. This will result in workers being referred to jobs in the order of relative importance to the war effort.

Q. In how many areas are these programs now being used?

A. Manpower priorities committees have been set up in 56 areas. Employment ceilings are in effect in 31.

Q. What does a manpower priorities committee do?

A. This committee determines on the basis of production demands which employers within the area shall have the first call for labor. They also work with the area director in setting up employment ceilings.

Q. What is meant by "employment ceiling"?

A. An employment ceiling is the highest level of total employment or of specified types of employees which an establishment is not permitted to exceed, based upon an approved and necessary production schedule.

Q. Do ceilings for all employers in an area follow the same pattern?

A. Ceilings may be established to maintain employment at present levels; to permit employment expansion, or even to lower the employment level where practical. Those already in effect are of varying types. Some apply to all workers, some only to men, and some only to workers in certain industries.

Q. Will a man ever be referred to other than an essential job?

A. Only when:

1. He is not needed for any essential job in the area.
2. He is unable to accept an essential job outside the area.
3. He cannot take the job without undue hardship or unless special emergency circumstances or other good cause would prevent his acceptance.

Q. Will the employer be given a freedom of choice in accepting men sent to him by the USES.

A. He will have wide latitude of selection. After all he has a job to do and he knows the kind of men he wants on that job. The War Manpower Commission's concern is to see he has an opportunity to hire the men he wants.

Q. What happens if the man doesn't want the job offered by the USES?

A. He will be offered another, then another and still others successively for which he is qualified in essential and locally needed activities in the order of the relative urgency to the war effort.

Q. Will there be any limit to the number of jobs that will be offered to a man?

A. In some areas it may be decided to put in a priority referral plan that provides for limiting the number. This will be determined largely on the basis of the stringency of the labor market and the urgency of the production in the area. In some areas where labor is very scarce it may be that a worker may be given a very small choice of jobs.

Q. Is a statement of availability still required?

A. Yes.

Q. What about men released as the result of cuts in production schedules?

A. These men also need guidance in getting into new jobs. They are needed in other plants or in other areas where war production schedules are being increased. An increase in cutbacks would only emphasize the need for priority referrals to get the released workers promptly into urgent war jobs.

Q. Must a member of a trade union get a job through the USES?

A. He may be placed, as he has in the past, through the *union hiring hall,* providing definite arrangements have been made with the WMC.

Q. How about a war veteran?

A. A recent ruling gives the veteran 60 days after the effective date of his discharge to take any job he wants, even if it is in a non-essential industry. After that he will be referred to a job through the channels indicated by the War Manpower Commission.

Q. Do part-time workers come under this plan?

A. In principle, yes. But local arrangements will be worked out to handle that situation. Ordinarily the very nature of this work makes it impractical to place the same restrictions on the choice of part-time jobs as are placed on full-time workers.

Q. Suppose a worker feels that the operation of the system has injured him in some way, what can he do about it?

A. He has the right to appeal—first to the local organization of the War Manpower Commission and, finally, if he is still dissatisfied, to WMC headquarters at Washington.

Q. How about an employer who doesn't like the employment ceiling that may be fixed?

A. He too has the right to appeal. The War Manpower Commission already has appeals machinery to handle cases of all sorts in which either the employer or employee feels he has a just grievance.

Q. Are any penalties provided for unauthorized hiring?

A. There are penalties, direct and indirect, but the War Manpower Commission believes the self interests of management will be sufficient to make the plan effective. Authority for penalties can be found in the Act giving the President extraordinary wartime powers and in certain other legislation. Among the indirect penalties, or sanctions, is one that makes it possible for the War Manpower Commission to give a statement of availability to any of a plant's employees. The WMC could also stop referring any workers to a plant which fails to cooperate. It is improbable that these drastic penalties will be imposed except in extreme cases.

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UNITED STATES STEEL

National Warm Air Mid-Year Meeting

THE 1944 mid-year meeting of the National Warm Air Heating and Air Conditioning Association held June 7 and 8 in Chicago was keynoted by President H. P. Mueller who said—"Most of our activities since the last convention have been projected toward the day when we will be engaged in normal civilian operations. We have necessarily had to operate under many restrictions during the war and many of these restrictions will undoubtedly carry over, for a time at least, into the postwar period. As to how long these restrictions will remain with us will depend to a great extent upon the attitude, the initiative, and ability of American business men to demonstrate their aptitude to create and maintain business activity that will provide adequate jobs and prosperity for everyone. We find ourselves today between two pressure groups—labor on the one hand and government on the other. Our conduct as individuals and companies will determine to a large extent whether this pressure will increase in the postwar period or whether we will be in a position whereby we will be, to a greater measure, the masters of our own destinies. We are going to be confronted with high taxes, high labor rates and intense competition for the public dollar. We are going to find ourselves in the middle of two other pressure groups —higher costs on the one hand and extreme sales competition on the other. Our future policy should be that we sell our goods on the merits and benefits of the results which we can provide the American public. We should discourage price cutting and selling based primarily on price.

"If we will sell the public on the results we can produce, we will create a greater desire on the part of the public to spend its money to improve its home comfort and conveniences. Better results, from the standpoint of increased comfort and convenience can be obtained in a large measure from automatically controlled equipment. Whereas gas and oil as fuel have not been extensively sold because of the cost of operation, we know that the cost of heating a home can be materially reduced if all the fuel conservation facilities available today are fully utilized. Our industry should also place itself in a position to provide summer air conditioning and therefore indoor comfort throughout the entire year. The present day warm air heating contractor should logically be the year-around contractor to provide indoor comfort. There is no need for new faces to enter our business, except as the overall growth of the business justifies such expansion.

"We should develop more industry 'standards of policy' so that we can truthfully answer what really constitutes a good installation, or what is the proper percentage of relative humidity to maintain, or, where should registers be located, and other similar problems. We are going to endeavor in the future to develop ways and means whereby the vast amount of knowledge accumulated in our research activities for the last several years will be disseminated to the people for whom it was really developed in the first place—the contractors—so that the entire industry may benefit thereby. Since the success of any business or industry is largely dependent upon the intent to which that business or industry tells the public about its goods and services and since our competition is going to literally bombard the public with printed and spoken messages, selling the ideas and products they have to offer, our industry must, in the same way, engage in a comparable program. If we do this, our future is assured."

Dealer Education

Arthur L. Scaife, Merchandise Manager, General Electric Company, Appliance Sales Division, said that in the postwar period industries must launch the biggest training program ever envisaged by American industry. These programs must reach every dealer, all of the manufacturers' personnel, the jobbing and distribution agencies so that each in turn will know exactly what must be done to make the business a success. In connection with this educational program, the speaker said that up-to-date it seems as if veterans are encountering difficulties in readjusting themselves to civilian occupation and we must include as part of our educational program an enlarged veterans' rehabilitation if we expect to fit veterans into our manufacturing and sales set-up. More than ever before, the selection of salesmen must be carefully conducted because all costs in the postwar period will be very high and only the producer will show a profit. All industry should abolish the so-called "straight commission" salesmen who never was an adjunct to most businesses and in the postwar period is quite likely to be a serious handicap. Salesmen, in order to meet the postwar competition, must have the assurance of sufficient income for housing and food if industry is to obtain maximum results from their selling efforts.

As to some of the postwar surveys, Mr. Scaife reminded his listeners that most individuals today with a well-paying job and a larger than normal income say "Yes, we will buy so-and-so" but if the same person becomes frightened at the postwar prospects, many of the things they now say they will buy will not be purchased, so we should accept all such postwar surveys of what the public will buy with a very large grain of salt.

The Future Oil Supply

C. E. Lewis, president of the Oil Heat Institute of America, discussing the future of oil as a heating fuel warned his listeners not to become frightened at prognostications of scarcity of oil. Fuel-oil rationing has further served to frighten the public over the prospects of future oil. Not so long ago one survey showed that 40 per cent of the oil users planned to change because they were afraid oil would be too expensive or not available after the war. But more conservative estimates, said the speaker, indicate that there is a world supply of oil sufficient for at least three hundred years and the United States supply of oil has not even been accurately estimated. Some major oil producers are more concerned with finding markets for the vast amount of oil products we will have after the war than they are concerned of any scarcity of oil. One

problem, however, is in the new cracking processes which cuts the residual fuels to 30 per cent with 70 per cent light oil, whereas under old cracking processes, just the reverse was the case. Another problem is how to satisfactorily heat small houses with approximately 50,000 Btu heat loss and requiring a pressure burner nozzle smaller than ¾ of a gallon per hour capacity. The industry has not yet solved satisfactorily the problem of burning oil in amounts under ¾ of a gallon per hour in a high pressure burner.

Post War Distribution Costs

Clay Hollister, Marketing Committee, Producers' Council, said many major manufacturers and producers are worrying now about distribution costs in the postwar period. As a part of our post-war planning all industry should investigate thoroughly new methods of distribution and should give serious consideration to revamping present distribution methods in order to eliminate any unnecessary expense. As an example of what is involved in distribution costs a recent survey shows that in a $5,000 house, the materials cost only $1,100, leaving 77 per cent of the house for labor, hauling, installation, etc. Therefore, the manufacture of the products or materials used, can control directly only 25 per cent of the final cost of the house. All industry involved in construction should investigate the question of whether or not the remaining 75 per cent of the average cost of house construction are sound and fair costs, or if some of these costs may be eliminated or reduced.

Sterilization of Air

The sterilization of air in heating and ventilating systems was discussed by George Peyton, Westinghouse Electric & Manufacturing, Chicago. Mr. Peyton demonstrated and explained how there are bands of radio active or ultra violet or heat producing waves in the light spectrum, with one light band possessing germ killing characteristics. This band, in the lower range of the ultra violet, can be produced by a very inexpensive tube, and this tube can be installed in a room or in a ventilating duct to completely kill all germs in the air which pass within view of the tube. The number of tubes required in a given space, or the number of tubes required in a particular duct section can readily be determined by graphs which have been prepared. These Sterilamps possess several interesting characteristics such as they will age beef in 48 hours in place of the usual 42 days; they will protect bread until the bread is hermetically sealed; they will decrease the bacterial count of air by 98 per cent—and all of these installation possibilities are definitely a part of the usual work performed by the heating and ventilating contractor.

What is Ahead in Heating

What is Ahead in Heating was the subject of a paper presented by Morgan W. Johnston, Plumbing and Heating Division of WPB. Since the material in this paper deals directly with the prospects for furnaces in the last half of 1944, most of the paper is reproduced elsewhere in this issue.

The Smokeless Furnace

Professor A. P. Kratz of the University of Illinois, showed slides and explained the construction and operation and results obtained with the Fellows smokeless furnace. Since it is impossible to explain the construction of the furnace in words, and since the University has not released the drawings of the furnace as yet, a complete discussion of this interesting development will be published as soon as the necessary illustrative material is available. It can be said here, however, that this furnace is not designed to be a "magazine type" furnace, but it will operate in average winter weather for two or three days without attention. It might be a magazine furnace for hard coal, but is not so designed for soft coal. The furnace has been tested on eighteen different types of fuel, ranging from lignite to hard coal, and coke, and if the underfire and overfire air is properly proportioned and adjusted, the furnace will burn all of these different coals satisfactorily. The proportioning of the air introduced under the fire and over the fire is a part of the furnace construction and is not adjustable by the owner or the heating contractor.

The Forced Warm Air Manual

Professor S. Konzo of the University of Illinois described the various clinics on controls and humidification recently conducted at the University as published in the June issue of AMERICAN ARTISAN. The results can be briefly summarized as: The mixing of controls by manufacturers or by types (3-wire with 2-wire or high voltage with low voltage) usually leads to trouble and should be discontinued. The Research Residence staff is urging control manufacturers to put everything up in packages to simplify installation and wherever possible to do the wiring by panels or complete within the instrument.

The new forced warm air heating manual has been published in preliminary form and distributed to almost 100 interested persons for comment and study. As a result of this study several changes probably will be completed by December when it is hoped the final edition will be ready for distribution. Use by interested persons discloses that the new forced air manual is basically sound, is very practical, is free from most all arbitrary choices, and meets the present trends in or specifications for rating furnaces. Furthermore, the standardization of registers, pipe and fittings, sizes and styles is quite in line with the recommendations of the Bureau of Standards and the American Gas Association. It will be interesting for contractors to note when they receive their copies of the new manual that the manual gives no choice of bonnet temperature or duct velocities or resistance within the system, but assumes arbitrary bases for these and working from tables and charts, the installer can size the entire system once he has obtained the heat loss of the room. No calculation, except one or two small additions, are necessary.

AMERICAN ARTISAN hopes to be able to publish a complete analysis of the new manual and an explanation of how it should be used by Prof. Konzo, later in the year.

National Fuel Resources

Ralph A. Sherman, Supervisor, Fuels Division, Battelle Memorial Institute, speaking on fuel reserves, admitted that there is a great deal of controversy over the future supply of oil and gas and said he felt sure that there is sufficient oil and gas in the world as a whole to meet our needs,

but questioned whether or not we wished to haul oil around the world for heating purposes. If American home owners understood that oil was scarce and they could have a choice of oil for their automobiles or oil for heating, it is quite likely, said Mr. Sherman, that the homeowner would choose to burn coal or gas in his heating system and reserve the oil and gasoline for his automobile. We may expect in the postwar period many improvements in stoker design and operation so that some of the problems of stoker firing will be completely eliminated. If this proves correct, said the speaker, then we may anticipate an increased acceptance of stokers as a method of firing; we can also anticipate various types of magazine stoves and furnaces which can and will replace oil stoves and space heaters and it is not unreasonable to anticipate magazine type furnaces and boilers which will have most of the characteristics of stoker firing without the stoker complications.

OPA Activities

Orrin S. McCorrison, Office of Price Administration, Washington, briefly reviewed some of the past history of price control and said it might surprise his audience to know that in OPA there are a total of 325,000 people working voluntarily and without pay on local war price and rationing boards and only 55,000 paid employees in the whole OPA. Of these 55,000 paid employes, 51,000 are in the field and district offices. Finally, throughout OPA, there are only 720 men who really control prices. That OPA has been successful in its primary aim to keep prices from getting out of hand is indicated, said Mr. McCorrison, by the fact that in World War I there was an increase of 64.6 per cent in cost-of-living, whereas in World War II, up to date, the increase has been only 25.9 per cent in cost-of-living items.

Mr. McCorrison explained how an individual or a firm may obtain a price increase in a particular commodity—his explanation is the same as in the October, 1943, issue, page 37.

Better Accounting Methods

Irving L. Jones, President, International Heater, and an advocate of better cost accounting methods in the industry said he felt sure that our industry's contact with OPA and WPB has demonstrated conclusively the need and advantage for a uniform and accurate cost accounting system. Good accounting should be a part of the contractors' management, as well as the manufacturer, because of the need today for tax purposes and reporting purposes; the dealer must separate all his operations into numerous subdivisions for inspection or for recording and reporting. It seems likely, said Mr. Jones, that too many dealers spend a great deal of time in intricate cost estimating for bidding purposes, but keep very poor cost records of what the job actually costs, once they get the contract. The only satisfactory solution to this problem is an operating budget or plan which takes expected sales and profit then costs operations by the month, so that the firm can tell precisely every thirty days whether or not costs are keeping within the estimated budget. For the complete discussion of this proposition, American Artisan suggests that readers refer to articles by Arthur Roberts on these same subjects appearing in the January, 1944, issue, page 105; February, 1944, issue, page 32; March, 1944, issue, page 42; June, 1944, issue, page 50.

Office of Civilian Requirements

In the absence of Donald S. Woods, Chief, Plumbing and Heating Branch, H. S. Norris, Chief, Heating Branch, Plumbing and Heating Division, of WPB, presented a paper prepared by Mr. Woods in which Mr. Woods said—"In both the direct and indirect war effort, your industry can be justly proud of the production of thousands of war items, plus the regular production of furnaces for the military and housing needs. You are also to be commended because the warm air heating industry through its trade publications stated some months ago that shortages existed and would continue to exist and your industry recommended repairing and patching wherever possible to preserve the depleted stock of available furnaces for absolute essential replacement. Realizing that this job had to be done, your field organization, dealers and installers, have executed a commendable job in keeping the home fires burning. I believe I speak for other government officials, that the response would be difficult to parallel in any other industry.

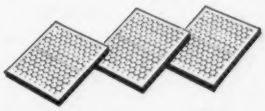
"We all agree that we can go along with conditions of this kind for just so long and then provision must be made for relief of some kind in direct proportion to the need proven by established criteria. This is the responsibility of the Office of Civilian Requirements. In general the function of OCR is to take care of all civilian needs of our homes, churches, schools, stores, etc.

"To determine just what these needs are, complete studies are made of all items in use in order to place each in its proper relative importance of need and available material. Since there is just so much material available for all purposes, including civilian needs, and since there is nowhere near enough for full production economy, a planned economy limited to production based on essentiality and urgency has been worked out by WPB. Since heat is essential to human life, heating equipment is, therefore, highly essential and a necessary requirement for the indirect promotion of the war efforts. How the materials to produce these civilian needs are obtained has been explained in your trade publications (American Artisan, October, 1943) (June, 1944) therefore, I need not repeat these processes here.

"To come down to the specific problem of furnaces, we know that Army, Navy, National Housing Agency, have claims on material for furnaces, but these claims are relatively minor. The largest area of use is the civilian area. Since there are approximately seven million furnace users with 77 per cent of these users in the Northern section of the country, OCR has determined upon the base of furnaces in use approximately how many furnaces should be required for replacement purposes each year. Considering all these factors, OCR arrived at a figure of 220,000 furnaces annually to take care of replacement, but although we established this replacement figure of 220,000 replacement furnaces in 1943, material secured to produce furnaces has not yet reached this level. In 1944, further difficulties were encountered, an example of which is the shell container program, which calls for 160,000 tons of sheet in the third quarter alone. As a result of this and other programs, sheets are now in a critical condition, more so than any time since Pearl Harbor. This is the reason why OCR has to take almost all cast iron furnaces and to curtail the materials allocated for the

(*Continued on page* 111)

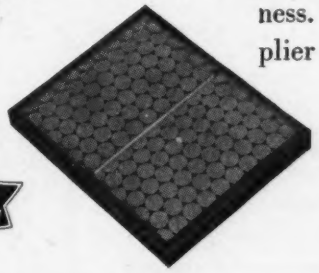
Pick HOT prospects out of cold furnaces

Now, when forced-warm-air furnaces are shut down tighter than a clam is an excellent time to install Dust-Stop* Air Filters.  Get furnaces all set to save fuel this winter when your work is slack. Your customers will appreciate this service. Also, when you install new Dust-Stops now, you get an early start on your Fall Business... spread out the work to help ease the peaks of orders in September and October.

Dust-Stops Offer Biggest Dealer Help Campaign in Air Filter Business

We send you free, colorful displays for your counters and windows. You receive free, attractive folders imprinted with your name and address. In addition, you get free newspaper ad mats, furnace labels . . . effective radio spot announcement scripts.

You also receive a free catalog of filter sizes to help you fill Dust-Stop orders quickly over the phone or the counter.



These Filters are Backed by National Advertising

Beginning every fall, big space advertising in a group of nationally known magazines carries the Dust-Stop story to millions of householders. This fall, we are going to do it again. Get a jump on your fall business. Ask your nearest Dust-Stop supplier today for complete information . . . *Owens-Corning Fiberglas Corporation, 1930 Nicholas Bldg., Toledo 1, Ohio. Fiberglas Canada, Ltd., Oshawa, Ontario.*

FIBERGLAS* DUSTOP* AIR FILTERS

*T. M. Reg. U. S. Pat. Off.

Business Session—Carolinas Roofing and Sheet Metal Contractors Association

Carolinas Annual Conference

THE annual conference of the Carolinas Roofing & Sheet Metal Contractors Association was called to order by President Waters in the Gold Room, Barringer Hotel, Charlotte, N. C., on June 14 at 1:30 p. m. The singing of America was led by George Leiter, of associate membership. R. C. Barker gave the invocation. H. H. Baxter, mayor of Charlotte, gave the welcoming address.

President Waters, in his message, called attention to the organization of the Carolinas association a year previous, of its affiliation with the United Roofing Contractors' Association, of the monthly Carolinas Roofer and the excellent work of the editors appointed to serve for one edition each, and of the keen interest of every member.

◆

Reports of the following outstanding committees were rendered by respective chairmen: Postwar, Joe Piper; Compensation Insurance, V. D. Ramseur; Membership, W. T. Fort.

Report of U.R.C.A. Chicago national convention given by delegate Joe Piper.

Report of Sheet Metal Contractors' National Association Chicago national convention given by delegate J. V. King.

Report on the sign and emblem committee by chairman Joe Piper. It being decided to purchase job signs, which will be available to all who desire them.

Motion by Earl DeLay that committee be appointed to establish a trade school carried unanimously. The following committee appointed by Pres. Waters: V. D. Ramseur, chairman; Earl DeLay, Vic King.

Motion by George Leiter that associate organization be allowed to use contractors' emblem. Motion carried unanimously.

Report by nominating committee of associate members listing the following officers of Carolinas Roofing and Sheet Metal Suppliers Association: George Leiter, Charlotte, N. C., president; James Scarboro, vice-president; George Brown, secretary-treasurer; Directors: R. T. McManeus; C. S. Evans.

Open Forum composed of varied discussion on problems of our industrial trade led by Ralph Barker.

On motion from the floor, the following resolution committee was appointed by Pres. Waters: Ralph Barker, W. P. Baker, R. H. Bowles.

The main address was delivered by William Worsley. Viewed industrial moving picture entitled "The Big Inch."

On the morning of June 15, President Waters delivered a message of appreciation to associate members, with a response by R. T. McManeus, Johns-Manville Co.

Address by Walter Hook, architect, entitled "The Roofing and Sheet Metal Contractors' Place in Postwar Plans."

Address by John Paul Lucas on "Economics of the Carolinas."

(*Continued on page* 120)

1944-45 Officers: (Left to right), seated, President Baker, Secy.-Treas. Fort, 2nd Vice-Pres. Flynt, Vice-Pres. Ramseur. Standing, Directors V. King, G. Waters, J. Piper, H. King.

You can get it now

You can sell it now

Waterbury

GASTITE FURNACE

MODERATE IN PRICE—HIGH IN QUALITY

We are proud to offer this furnace to the trade as a most satisfactory and profitable means of meeting today's market conditions.

We are especially proud of the smart job our engineers have done in meeting wartime restrictions without sacrificing any essential quality or feature that assures complete satisfaction to the homeowner.

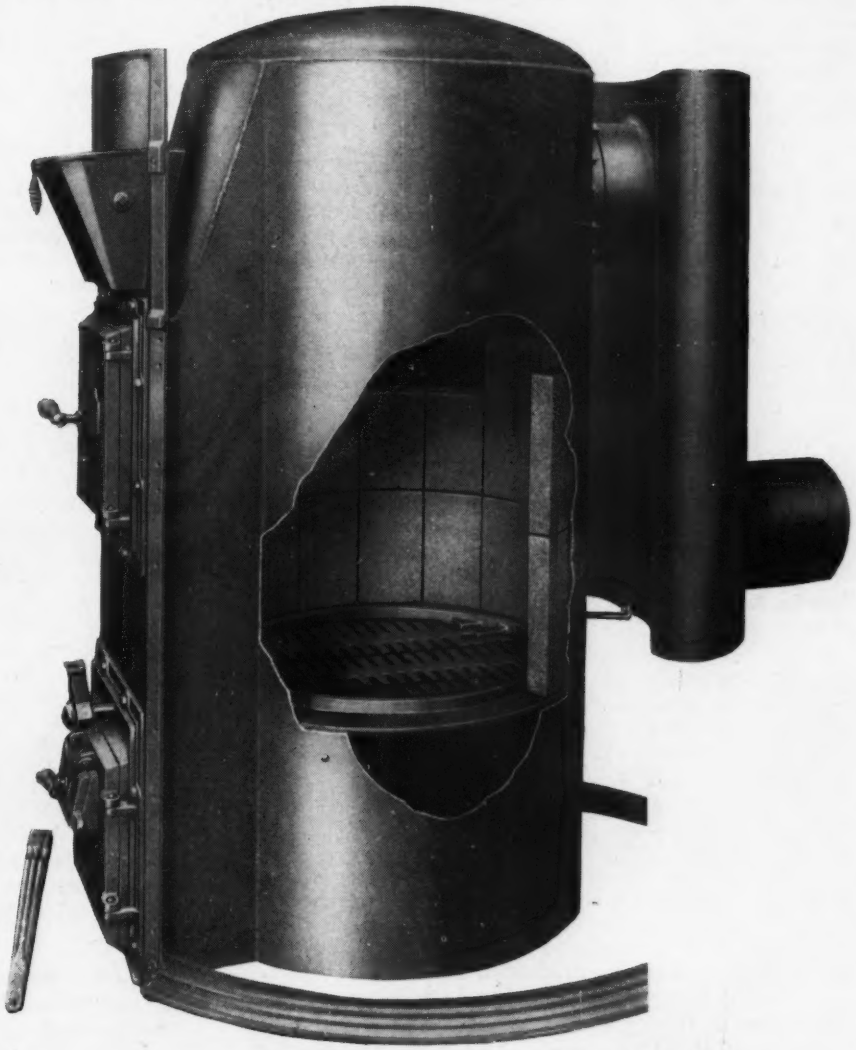
This same simplification enables us to offer you this solid one-piece steel body job with large combustion chamber at a price to serve your most active present market at a profit.

With the "Gastite" you will give your customers heating efficiency—fuel economy—freedom from gas, smoke and ash dust in the heat stream—a furnace that they will be proud of throughout its long life. A furnace up to WATERBURY standards in all respects.

Sizes 20" to 27" inclusive. Larger sizes in the "Seamless" series to 36".

WRITE OR WIRE TODAY FOR DETAILS. Prompt shipment on l.c.l. orders. Carload orders shipped in approximately thirty days, subject to prior orders.

Keeps Gases and Dust Out of the Heat Stream



NOTE—Water-pan omitted under W.P.B. restrictions

THE WATERMAN-WATERBURY COMPANY

1122 Jackson St. N. E., Minneapolis, Minn.

ASSOCIATION Activities

Resolutions Presented to National

The following resolutions were unanimously adopted at the convention of the Sheet Metal Contractors' National Association held in Chicago, April 27-28, 1944, and are all being sent to the proper authorities for their attention.

No. 1, Resolution submitted by **New York State Sheet Metal, Roofing & Air Conditioning Contractors' Assn., Inc.**

Whereas; the War Production Board has had a very difficult task in allocating critical materials, and

Whereas; the order of civilian requirements of the War Production Board has stood for the rights of the public, and has insisted that materials should be made available to take care of at least a fraction of the replacements and repairs needed to keep our homes in livable condition, and to keep our industries operating, and to keep our farmers producing.

Therefore Be It Resolved, that we endorse the actions of the War Production Board in making available such materials as have been authorized for essential repairs and maintenance work, and

Be It Further Resolved, that we recommend to the War Production Board that further releases of materials should be made as soon as possible, because the piling up of stocks of materials to an unnecsesary extent will mean that much greater a glut in the market when the war ends, and

Be It Further Resolved, that we assure those in authority that American citizens are adults of intelligence, and are mindful of the fact that a war is on, without having to be denied materials which can be spared without injury to our war activities. Our sons and grandsons, our sons-in-law, our nephews, our brothers, our wives, daughters and sisters, as well as our aunts, uncles and friends are in this war; many of them have made the supreme sacrifice, therefore we realize there is a war on without having unnecessary hardships and annoyances inflicted on us.

No. 2—Resolutions submitted by **Central Committee Furnace & Sheet Metal Associations of the Metropolitan Area of Chicago.**

Blowers, as is well-known, are an essential part of every modern piece of warm air heating equipment. Nevertheless, the War Production Board has the control of the sale and installation of this equipment in the hands of the general industrial equipment division, which governs Regulation L-123, which in turn controls the use of blowers. We all know that blowers having a capacity up to 2500 Cfm have no application to industrial work and are primarily for use in domestic heating systems.

Be It Therefore Resolved, that blowers of these small capacities and of the type regularly used for furnaces be regarded as heating equipment and therefore should be transferred to the jurisdiction of the Plumbing and Heating Division of the War Production Board.

No. 3—Resolution submitted by **Sheet Metal Contractors Association of Illinois.**

The Sheet Metal Contractors Association of Illinois in Convention Assembled at Peoria, Illinois, April 12-13, 1944 passed the following Resolution that the "Sheet Metal Contractors National Association, Inc." use all means in their power to have War Production Board allot more material for Rain Carrying Equipment and 40-60 solder.

No. 4—Resolution submitted by **Furnace—Air Conditioning Sheet Metal Institute.**

Since it takes more man-power and more material to solder work with war-time solder, we feel it would be more economical of man power and material if the sheet metal trade would be granted a solder of at least 40 per cent tin content.

The manufacturers of rain carrying equipment are being hampered in furnishing with gutters and conductor pipe because of the failure of the War Production Board to allot sufficient sheet tonnage to those manufacturers for this production. We think a resolution should be drawn up which would put the National Association in favor of allowing more metal sheets for use in rain carrying equipment.

◆

The wife of **Thomas Ewing**, treasurer of the Sheet Metal and Warm Air Heating Contractors' Association of Indiana, Inc., passed away Wednesday, May 24, with funeral services at the residence, 862 North Jefferson Street, Huntington, on Saturday, May 27th.

◆

Peoria, Illinois

L. W. Reining, Chicago manufacturers' representative, spoke before the Peoria (Illinois) contractors on May 29th on humidification. Mr. Reining reported a pleasant meeting with almost 100 per cent attendance and several new members.

Mr. Reining's talk on humidification was in terms of the number of gallons per day per room rather than in percentages of relative humidity to temperature.

Contractors were warned to uphold the prestige of warm air heating with humidity, vs. radiator heat.

◆

Florida

The June 15 issue of **The Florida Roofer** published by The Roofing & Sheet Metal Contractors Association of Florida carried a directory of manufacturers' representatives and wholesale houses giving service to Florida shops.

The subject of affiliation with a National association was discussed and referred to a committee to report back at the next annual convention.

The secretary has just learned that Charles E. Hetzel of Hetzel Roofing Products Company passed away last September. Mr. Hetzel had attended many conventions.

L. A. Burgess, Secy-Treas., West Palm Beach.

◆

Obituary

Max Liebermann, former secretary of the Pennsylvania Association, and also one of the Directors of the Sheet Metal Contractors' National Association, Inc., died on June 25.

◆

Carl M. H. Kaercher, 51, consulting engineer for the city of Shaker Heights and of the engineering firm of MacGeorge & Hargett, and manager of the Central Bureau for Heating and Air Conditioning, Cleveland, died June 12.

Mr. Kaercher was twice secretary-treasurer and also president of the Cleveland chapter of the National Society of Heating and Ventilating Engineers.

Mr. Kaercher is survived by his widow, the former Edna Goodaire, and two sons, Edwin B. and Ralph W.

[More Association Activities on Page 102]

Research } SUNBEAM

Research has been a major factor in the development and refinement of SUNBEAM Warm-Air Furnaces and Winter Air Conditioners.

Our engineers are continuing research so that when the urgent demands of war production have been met, and materials and labor are again available, product development will proceed without delay.

In the meantime, our plans today do not call for nor contemplate any change in our pre-war method of distribution.

Our Institute of Thermal Research, Yonkers, N. Y.—completely equipped with all modern facilities for research and experiment.

AMERICAN RADIATOR & Standard Sanitary

New York CORPORATION *Pittsburgh*

NEW PRODUCTS

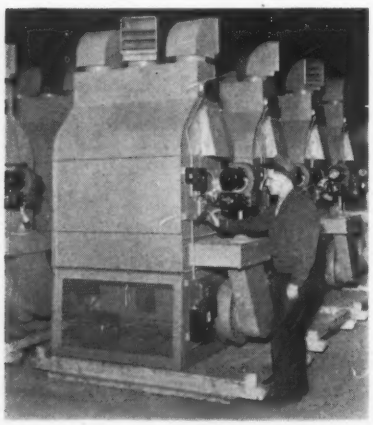
For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on page 100 and mail to us.

△ Indicates manufacturer not listed in 1944 Directory.
● Indicates product not listed in 1944 Directory.

● 43—Igloo Heaters

Dravo Corporation, Machinery Division, Heater Department, 300 Penn Avenue, Pittsburgh, announces a small model of the Dravo Direct Fired Heaters with capacities ranging from 300,000 to 850,000 Btu output.

This new model is one which Dravo now is supplying to the armed forces to heat steel service igloos at advanced bases. It retains the principal



characteristics of the regular line of Dravo direct fired heaters but on a scale in keeping with the smaller Btu output. Over-all size has been reduced in proportion so that floor space requirements are now just 5¼ x 3 ft. It can also be suspended from the wall where floor space is not available. This model can be equipped to burn either gas or oil. Oil burners may be quickly removed and gas burners and controls substituted or, vice versa, as conditions direct. The heater is thermostatically controlled and requires a minimum of manual attention.

◆

44—Fleetweld

The Lincoln Electric Company, Cleveland, Ohio, has just announced a new general-purpose electrode for mild steel, designated as "Fleetweld 35", and made specifically for operation on A. C.

This new shielded arc electrode, which will also operate on D. C. with either polarity, depending upon the type of work being done, has all the desirable characteristics of the popular Lincoln "Fleetweld" electrodes for high speed welding of single or multiple passes for work in flat, vertical or overhead positions.

Available in ⅛-inch, 5/32-inch and 3/16-inch sizes, "Fleetweld 35" has exceptionally high physical properties, the as-welded weld metal specimens testing as follows:

Tensile strength	62,000 to 70,000 p.s.i.
Yield strength	52,000 to 57,000 p.s.i.
Ductility (elongation in 2 inches)	23 to 30 per cent

"Fleetweld 35" conforms to American Welding Society specifications for arc welding electrodes classes E-6010 and E-6011, is made in this standard 14-inch lengths and is packed in 50-pound containers.

◆

△ 45—Trammel

Mark Special Company, 406 Temple Building, Rochester 4, N. Y., is introducing a newly designed trammel, with 18, 24 or 36-inch bar; the bar is 3/16 in. square plated steel. Clips hold steel, points or a pencil or crayon.

The company also offers a precision beam compass; proportional dividers, an Edgeguard knife, stainless steel rules, etc.

◆

46—Quiet Fan

Utility Fan Corporation, 4851 So. Alameda St., Los Angeles, is introducing propeller fans of improved design for use where quiet is necessary. The new fans have a streamlined ring that permits smooth flow of air with minimum turbulance and noise, a

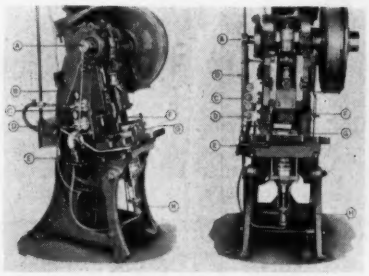
fully-enclosed motor that is resilient mounted to reduce vibration, and low speeds that further quiet operation.

Belt driven models have a variable pitch pulley for simple speed adjustment, and adjustable base provides a convenient means of regulating belt tension. All models have welded construction and operate with low power consumption.

● 47—Blanking Dies

Dayton Rodgers Manufacturing Co., 2835 12th Avenue South, Minneapolis 7, announces a new and improved technique of producing custom made flat die-cut stampings. This method is designed primarily to meet the requirements of manufacturers desiring a limited number of die-cut parts on a semi-production basis, where it is desired to limit the cost of the dies and punches because of a semi-small lot requirement.

By the use of the special sub-bolster "G", blanking punches from ⅜ to ⅝ in. thick can be fastened thereon.



Special hardened and ground stripping pins are nested around the blanking punch, passing through this universal sub-bolster plate "G" and are controlled for stripping action by the standard pneumatic die cushion fastened to the press bed frame. The blanking die is supported by the stripping pin, which is made of stock ⅜ to ⅝ in. thick, and is brought into blanking action by the special hardened and ground pressure punch pad "F".

There are two cams fastened to the punch press crank "A" controlling the two valve rods "B" and "C", which open and close two air valves "E". The combination pressure gauge and regulator allows the operator to increase or decrease the air pressure required on the pneumatic die cushion, including the smaller air cylinder "H".

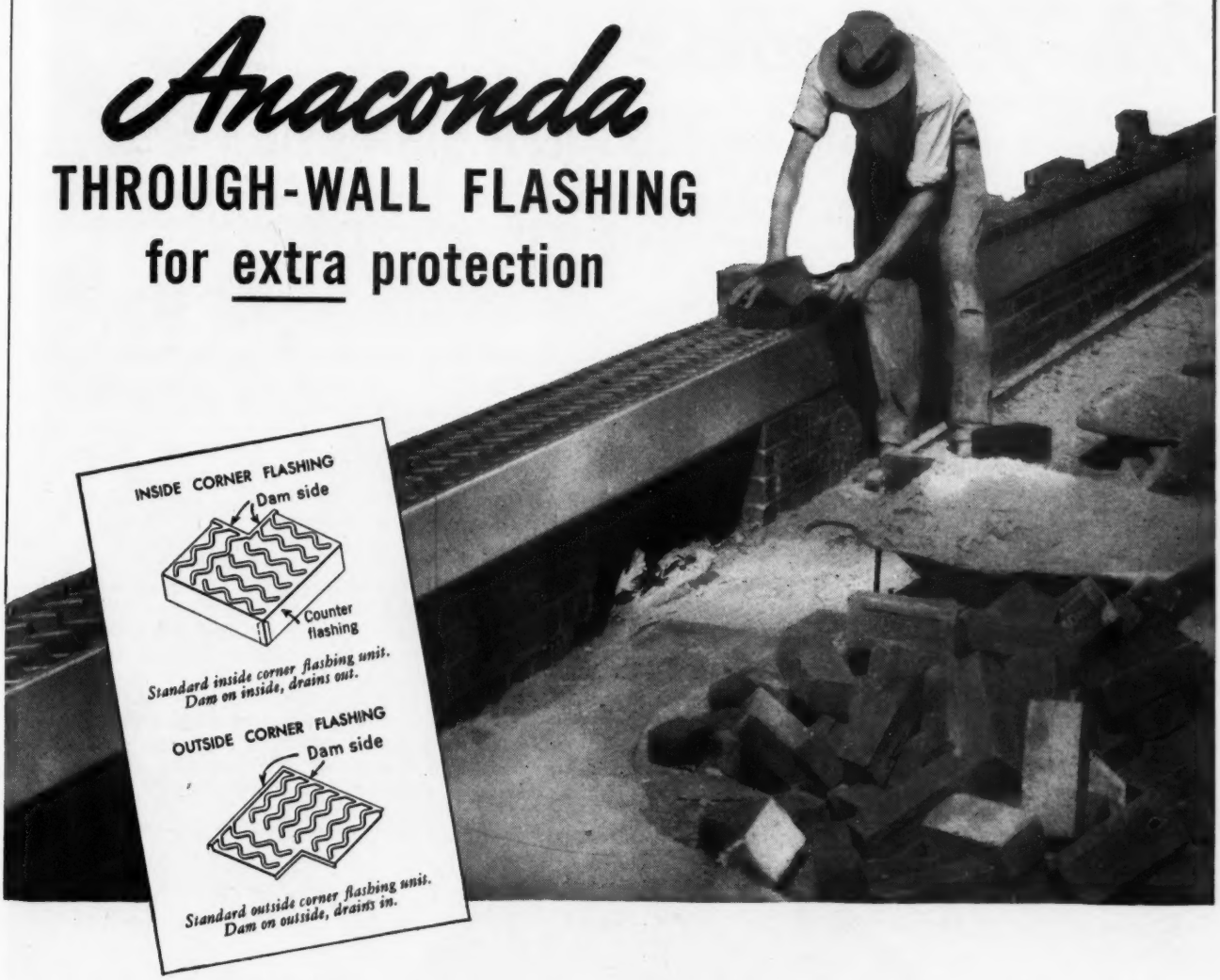
◆

△ 48—Metro Positioner

Metro-Vise Co., 6560 Cass Avenue, Detroit 2, offers the Metro (ball and socket) Positioner for holding or clamping work during operations such as checking, milling, drilling, shaping, boring, welding, filing, pattern making and similar work. Standard sizes —2, 3 and 4 inches.

Anaconda

THROUGH-WALL FLASHING for extra protection


INSIDE CORNER FLASHING
Dam side
Counter flashing
Standard inside corner flashing unit. Dam on inside, drains out.
OUTSIDE CORNER FLASHING
Dam side
Standard outside corner flashing unit. Dam on outside, drains in.

Anaconda Through-Wall Flashing is easily and quickly installed. Specially designed for the purpose, it offers extra protection advantages, and is adaptable to practically every masonry condition and through-wall flashing requirement.

Anaconda Through-Wall Flashing is made of 16 oz. copper—in 5 ft. and 8 ft. lengths—in a range of standard and special widths—including one-piece corner flashings. Bending and cutting can be done on the job.

Although not available today, substantial post-war use of Anaconda Through-Wall Flashing is anticipated. Send for Publication C-28 which contains a detailed description.

ANACONDA THROUGH-WALL FLASHING

—provides drainage in any direction, by means of an integral dam. *Drains dry on a level bed.*

—Zig-zag corrugations, 7/32" high, provide positive bond with mortar in all lateral directions.

—Flat selvage permits neat, sharp bends for counterflashing or locking to adjacent sheet metal without distorting the flashing or interfering with free drainage.

—Is easily locked endwise, even with edges bent, merely by nesting one or two corrugations. Such joints are watertight because of raised corrugations. 4432

ANACONDA

Anaconda Copper

THE AMERICAN BRASS COMPANY—General Offices: Waterbury 88, Connecticut

Subsidiary of Anaconda Copper Mining Company • *In Canada:* ANACONDA AMERICAN BRASS LTD., *New Toronto, Ont.*

New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 100.

252—Self-Tapping Screw Guide

Parker-Kalon Corp., 204 Varick St., New York 14, offers a new handy users' guide which shows **where** to **use what** self-tapping crew.

The eighteen pages are file size, tab-indexed, spiral bound, and arranged with a strong wall hanger. The guide includes a selector chart which tells at a glance which of nine types of self-tapping screws to use in various materials. Clear tables give recommended hole sizes, stock sizes and data on use of each type of P-K self-tapping screw under different conditions.

Application information covers use of self-tapping screws in sheet metal, steel, castings, plastics, plywood, asbestos and other compositions.

Also shown are special heads and special forms of P-K self-tapping screws which can be made for specific needs.

Distribution must be limited to engineering and production executives.

◆

253—Fuel Conservation Manual

Fuel Conservation Council for War, 500 W. Oklahoma Avenue, Milwaukee 7, Wisconsin, offers a free fuel conservation manual, the result of cooperative effort of the manufacturers of automatic controls, who are members of the Council. The book indicates the purpose and application of the various types of controls in relation to the big national fuel conservation job just ahead. Entirely non-promotional in nature, the manual treats its subject from the educational and practical approach, is a valuable book for anyone connected with the heating or maintenance of any building other than family homes.

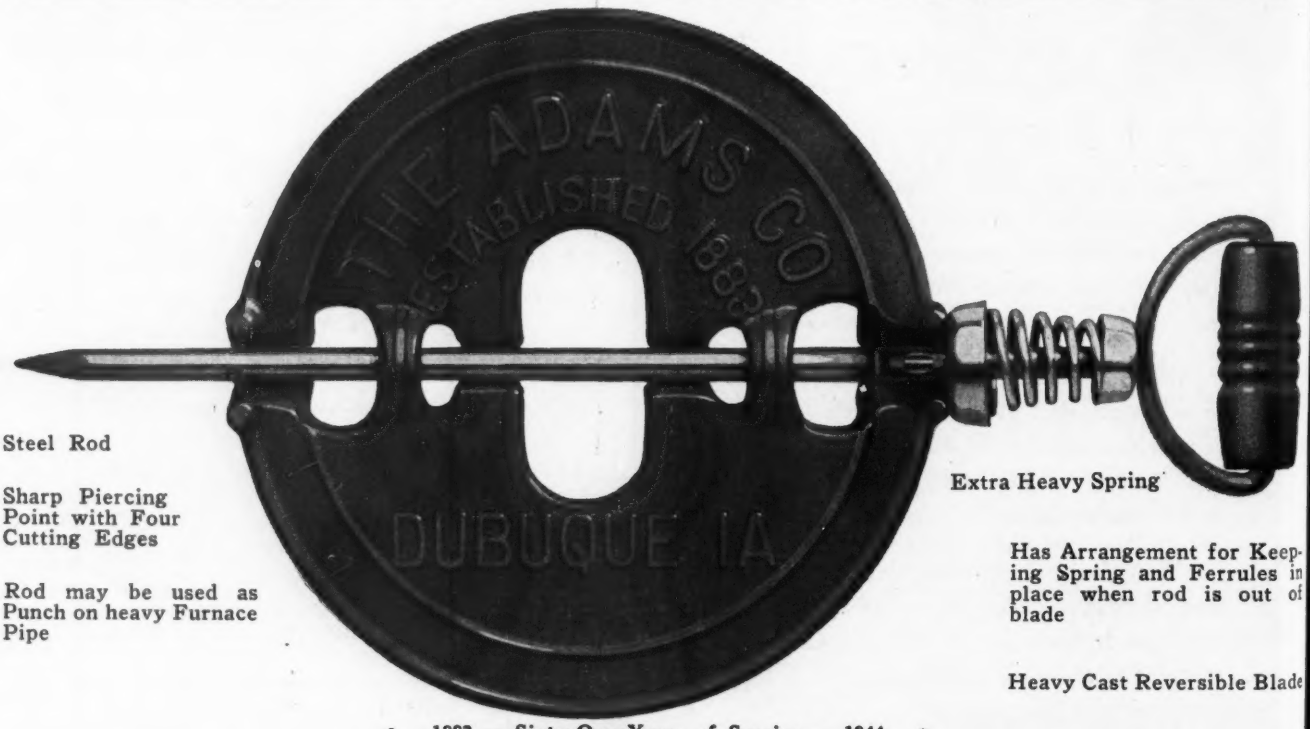
According to M. W. Crew, Chairman of the Council, there has long been a need for an impartial objective publication of this type. This need was recognized last year when the industry began to work with the Government bureaus concerned with the problem of conserving fuel. Consistent with the controls industry slogan "Fuel Conservation Starts with Control," this book specifically indicates how controls are a dominant factor in fuel economy. It is part of the controls industry's broad program in support of the national fuel conservation effort.

The book is available upon request from the Fuel Conservation Council for War or through any of the 26 controls manufacturers identified with the Council.

◆

254—Arc Welding Tool and Die Steels

C. E. Phillips & Company, 2750 Poplar Street, Detroit 8, Michigan, offers a handbook of engineering data, welding procedures and heat treatment procedures for tool and die steels, under the title, "Arc Welding in the Maintenance and Construction of Tools and Dies." In the introduction, it is pointed out that the successful use of arc welding on forming, stamping, forging and blanking dies depends on the selection of electrode material which will yield a deposit possessing physical properties comparable to those of the parents metal, and also qualities which respond to the same heat treatment as prescribed for the parent metal. That is, the more that is known about the parent metal, the better the conditions are for a wholly satisfactory application. Ten types of electrodes are described in following pages, each of these types being designed for a certain range or group of steels. The text explains the range of application of each electrode and furnishes heat treatment data, deposits characteristics, physical properties and special details of application procedure.



Steel Rod

Sharp Piercing Point with Four Cutting Edges

Rod may be used as Punch on heavy Furnace Pipe

Extra Heavy Spring

Has Arrangement for Keeping Spring and Ferrules in place when rod is out of blade

Heavy Cast Reversible Blade

• 1883 — Sixty-One Years of Service — 1944 •

ADAMS DIAMOND SMOKE PIPE DAMPER
MANUFACTURED BY
THE ADAMS COMPANY
DUBUQUE, IOWA, U. S. A.

Married Man Earns Nation's Gratitude by Inventing New Postwar Woman's Handbag

NO longer will long-suffering cashiers be driven to hara kiri or desperate men to strong drink waiting for the woman at the head of the line to find the stray nickel at the bottom of her hand bag.

No longer will street car schedules be disrupted by the female passenger searching frantically for the elusive car ticket in a jumbled melange of handkerchiefs, gloves, compact, lipstick, chewing gum, new and used, door keys, old letters, recipes, cough drops, hairpins, bottle tops, ration tokens, cigarettes, and aspirin tablets.

The worm—meaning the married man—has turned and one of them has added a fifth freedom—*freedom from waiting*—by inventing a new Postwar woman's handbag. In this marvel of ingenuity and efficiency, called the Pandora, each of the amazing number of articles a woman carries in her handbag not only has its individual compartment but is instantly delivered by merely pushing a button.

The larger model has landing wheels by which it can be propelled on the sidewalk instead of being carried.

Another deluxe model that will house Fifi or any reasonably small dog will be built only to special order, depending on breed, dimensions, and liquid capacity of pooch. Tree, fireplug or vegetable stand guard is extra equipment.

★ ★ ★

In course of time, we look for many new developments that will contribute greater comfort, convenience and happiness to Postwar living. Whether they come immediately after the war or later, such developments are more likely to be the result of years of patient study and experiment, than the miracle product of an overnight brainstorm.

RYBOLT Postwar heating equipment will incorporate many features that are new and advanced, some of the best that are old and proven, and none that represent change merely for the sake of change. With this happy combination we have every confidence that we can fully meet the requirements of you and your customers.

BUY MORE WAR BONDS!

THE RYBOLT HEATER COMPANY

615 MILLER STREET ★ ASHLAND, OHIO

New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 100.

255—Barometric Control with Thermostatic Regulation

Perfex Corporation, 400 W. Oklahoma Ave., Milwaukee 7, is distributing a 4-page folder covering their new barometric draft control for fuel saving. Series 6100 barometric draft control is manufactured in four models for 6 and 7, 8 and 9, 10 and 12-inch pipe.

The Perfex combustion control system includes the draft control, Magic Dial thermostat and limit control.

◆

256—Totrust Enamel and Paint

The Wilbur & Williams Company, Boston 16, offers a folder covering Totrust Enamel—heavy duty—for resistance to weathering and abrasion on automatic equipment, farm and contractor equipment, industry machinery, railroad and floating equipment, with 12 color samples.

Totrust rust preventive oil paint is intended for rusting metal roofs, rusting metal window sash, hot rusted metal stacks, rusted water tanks and towers, and sweating rusted pipe lines.

◆

257—New Allen Ventilation Literature

The Allen Corporation, ventilating engineers of Detroit, Michigan, announced eight new pieces of literature which together illustrate and describe approximately 50 per cent of their line of ventilating equipment. This literature has been designed and written to provide a practical, down-to-earth treatment of ventilation problems and to offer solutions to these problems based on the experience of men who have spent years in the field of ventilating engineering.

A series of three of these pieces cover the three types of turbine ventilators, a field of ventilation in which Allen pioneered. In these pieces is set forth for the first time in simple diagrammatic form, the basic functions and comparative efficiency of the familiar storm band, revolving cowl and turbine type vetilators.

All of the new Allen literature has been designed with a double purpose in mind, that of implementing the company's sales organization to do a better and more intelligent selling job, and that of bringing basic data for the use of architects, engineers, plant men and building owners.

◆

258—Welding Fluid Tests

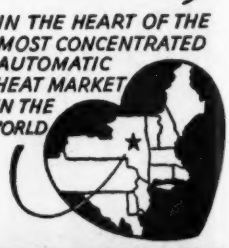
Midland Paint & Varnish Company, 9115 Reno Ave., Cleveland, has released a report by Dr. A. E. Arnold which discusses a comparative laboratory test made with galvanized iron and No-Spat Welding Fluid.

Duplicate pieces of galvanized iron were tested—one series was treated with No-Spat Welding Fluid while the other series were untreated. A competent welder using an oxyacetylene torch did the actual welding work. Each weld was stop-watched to two minutes and the torch removed, after which the accumulator pump was allowed to operate an additional two minutes to accumulate all the fumes and vapor.

The conclusion of this test would indicate that welding fumes and vaporization of zinc can be materially reduced at least thirty per cent.

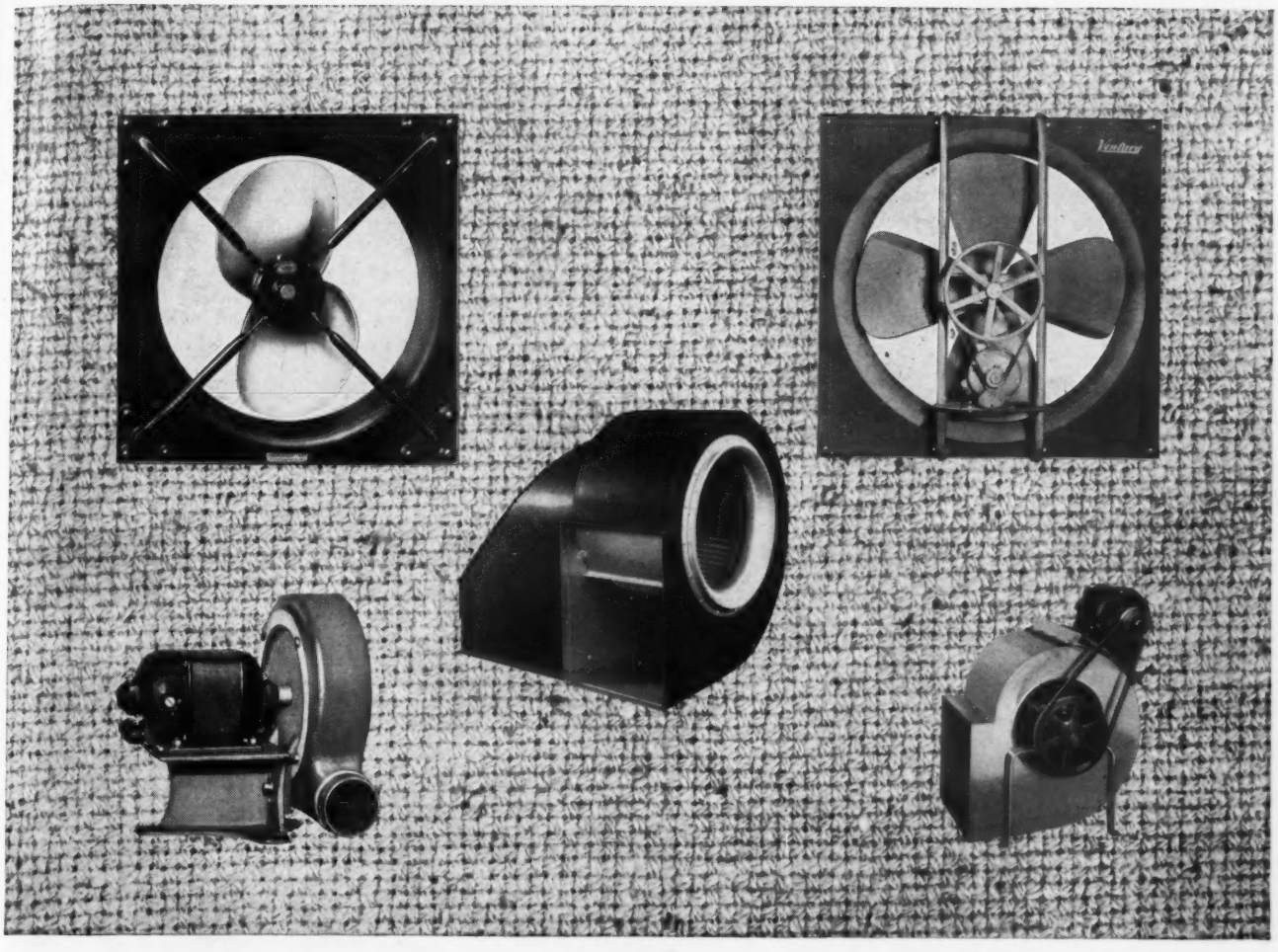
Send for this FREE Brochure...

A fascinating prevue of profit-packed post-war prospects for live heating equipment dealers. Hot off the press . . . with information as fresh as today's front page news. Drop us a line, NOW, with mailing instructions for YOUR copy.



C M W CATSKILL METAL WORKS, INC. CATSKILL, N.Y.

ONE OF THE LARGEST PRODUCERS OF ANTHRACITE STOKERS



Do Ventilating Contractors Perform a *VITAL WARTIME SERVICE?*

"For the want of a nail, the shoe was lost." Never before has the wisdom of this saying been so conclusively proved — By Industry? Sure. Industry has performed miracles. But we specifically refer to the tens of thousands of Ventilating Contractors and Dealers in America—those who used to sell and install ventilating fans and blowers for stores, apartments, public buildings, schools and homes.

Today, their service is a vital war task. A ventilating fan to remove dangerous fumes from a war plant . . . a pressure blower to speed the supply of badly needed drugs . . . cooling for a petroleum plant . . . and thousands of other air-handling jobs in industry.

Truly, these contractors have furnished the nail that saved the shoe. And when Victory is won, their knowledge of the ventilating and allied businesses, their skill and experience, will be reflected in better facilities and improved service in furnishing American Blower Ventilating Equipment and other products to a peaceful America.

After Victory, American Blower and its dealers and distributors will again be ready to supply good ventilation to everyone. Good ventilation is good business.

ARMY E NAVY
For Excellence in Production

AMERICAN BLOWER

AMERICAN BLOWER CORPORATION, DETROIT, MICHIGAN
CANADIAN SIROCCO COMPANY, LTD., WINDSOR, ONTARIO

Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION

New Literature

For your convenience in obtaining copies of new literature use the coupon on this page.

259—Brazing Alloy

Handy & Harman, 82 Fulton St., New York 7, offers Bulletin No. 14—16 pages—on how to prepare broken cutting tools with "Easy-Flo" low temperature silver brazing alloy.

◆

260—Flatjet Spray Nozzles

Spraying Systems Company, 4021-F West Lake Street, Chicago 24, offers catalog No. 22, covering the new Flatjet spray nozzles for use wherever a sharp, flat hard-hitting spray is needed—stone and gravel washing, industrial washing and degreasing, descaling operations and various chemical process spraying operations.

◆

261—Automatic Controls Catalog 100B

Detroit Lubricator Company, 5900 Trumbull Avenue, Detroit 8, offers "Automatic Controls and Accessories" for heating and air conditioning, engine protection, lubrication and industrial applications—Catalog 100B, 48 pages and cover, indexed. The company produces controls, filters, relays, switches, thermostats, transformers, and solenoid valves.

◆

262—Tangent Bender Bulletin 53-T

Struthers Well Corporation, Titusville, Pa., has published Bulletin No. 53-T, covering their tangent bender which offers wide designing possibilities with lower production costs in the lighter gauge metals.

This four-page bulletin pictures finished items of welded steel construction and the work in process with drawings briefly described.

◆

263—Oil Burner Service Catalog for 1944

Sid Harvey, Inc., 108 E. Mineola Avenue, Valley Stream, N. Y., is completing a 1944 catalog designed to help dealers servicing oil burners.

The first 34-page section covers accessories used in the servicing of oil burners.

The second section will cover oil carrying equipment and will show the serviceman the unit as he will find it in the field and give him the cost of making a complete rebuild or exchange of that unit, the price of the same unit new, the unit's availability, or what he can use to replace.

A third section covers "Harvey Packages" and will include standard fuel units and special units, separate pumps, regulating valves and strainers.

Miscellaneous oil carrying equipment—constant level floats, magnetic oil valves, wall pumps, etc.—will be followed by a section covering electrical controls—thermostats, relays, aquastats, pressuretrols—old and new.

FOR YOUR CONVENIENCE

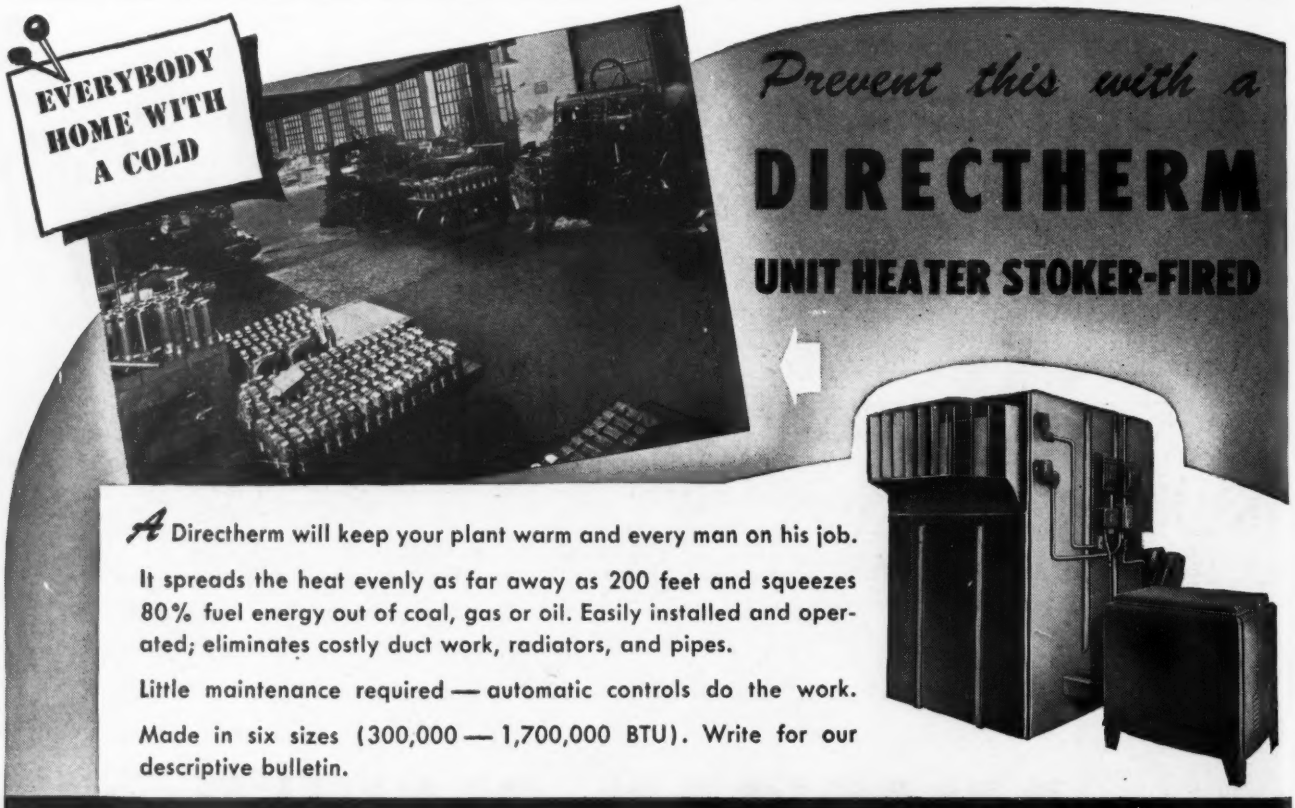
American Artisan, 6 N. Michigan Ave.
Chicago, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature." (Circle numbers in which you are interested):

43	44	45	46	47	48	252	253	254
255	256	257	258	259	260	261	262	263

Name .....
Company .....
Address .....

Are you Manufacturer———Jobber———Dealer———



A Directherm will keep your plant warm and every man on his job.

It spreads the heat evenly as far away as 200 feet and squeezes 80% fuel energy out of coal, gas or oil. Easily installed and operated; eliminates costly duct work, radiators, and pipes.

Little maintenance required — automatic controls do the work.

Made in six sizes (300,000 — 1,700,000 BTU). Write for our descriptive bulletin.

AIRTHERM MANUFACTURING COMPANY

706 SO. SPRING AVENUE, ST. LOUIS 10, MISSOURI

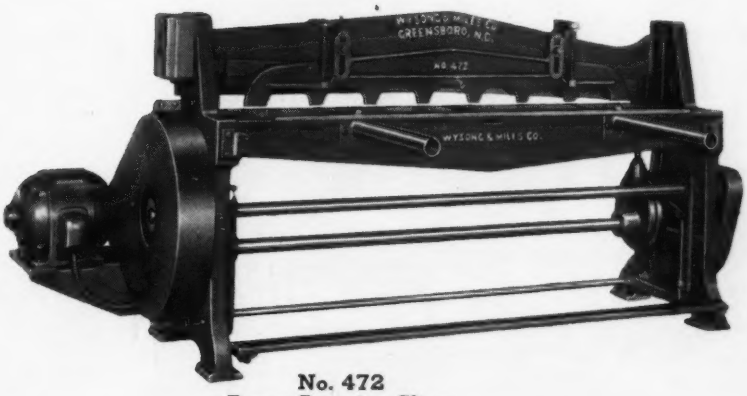
Proven Superiority

for your SHEET METAL SHOP

No. 410
Combination Sheet Metal Machine

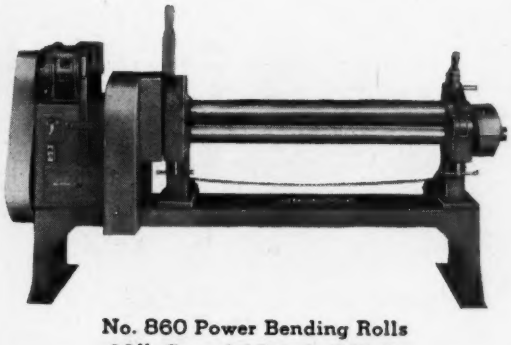
No. 410 with
Flanging Attachment

No. 410 with
Circle Cutting Attachment



No. 472
Power Squaring Shear

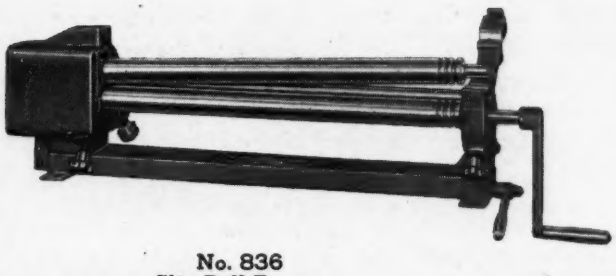
Here are machines that will bring greater production and precision to your sheet metal shop. Simple . . . powerful . . . sturdy . . . they are built to stand constant operation to meet today's heavy production demands. Prompt delivery.



No. 860 Power Bending Rolls
60", Geared 15 to 1, 5 H. P.

WYSONG and MILES
COMPANY

Designers and Builders of
MACHINE TOOLS . . . *For Over* 40 *Years*
GREENSBORO, NORTH CAROLINA



No. 836
Slip Roll Former

No. 448HD
Foot Power Squaring Shear

Keep YOUR *production in gear . . . for* VICTORY

● Even though firepot castings are getting scarcer and scarcer, it's no trick at all to do those furnace repair jobs easily, effectively, and with more over-all profit than you enjoyed in peacetime.

Simply use Fireline. No new firepot castings are needed because Fireline repairs cracked and burned-out firepots, completely sealing all cracks and holes and preventing escape of gas, odors, and dirt into the building. Moreover, Fireline linings protect good castings against burning out. Any Firelined furnace gives *more* heat from *less* fuel.

Fireline "fits" any make or size of furnace. There is no waiting for special parts, no dismantling the furnace. You can do far more jobs with the same manpower, and when the day is ended you'll find that your total profit is greater. You'll make a hit with your customers, too, because their repairs will cost them less and they'll save money on fuel.

Certainly, it will pay you to get the complete Fireline story today. Write for bulletins and prices with name of nearest jobber.

FIRELINE STOVE & FURNACE LINING CO.

1816 Kingsbury Street (Dept. G), Chicago 14, Ill.

WHAT FIRELINE DOES:

- Salvages burned-out firepots.
- Protects good castings.
- Saves fuel for the owner.
- Saves metal for the war.

KEEP A DRUM ON THE TRUCK!

FIRELINE

STOVE & FURNACE LINING

Association Activities . . .

Wisconsin

The first Board of Directors and District meeting of the Sheet Metal Contractors Association of Wisconsin, Inc., was held at Wergeland Hall, Racine, on May 6.

President Mantei called the Board of Directors' meeting to order and routine business accumulated during the past thirty days was disposed of. Proposals were made for a membership drive, legislative matters were discussed and disposed of.

President Mantei then called the District meeting to order with quite a large membership attendance from throughout the state. Most of the time was devoted to "Post War Merchandising" by one of the members who ably portrayed what he thought was in store for the industry and what he thought might be the solution.

After adjournment, the local members provided a splendid lunch with refreshments, supervised by Heilscher and Nelson. The next meeting will be held at Waukesha under the supervision of V. P. Birthrong on June 3.

◆

Stoker Manufacturers' Annual

On June 1st and 2nd, the 27th annual meeting and third annual war conference of the Stoker Manufacturers' Association were held at French Lick Springs, Indiana, with 130 members and guests from all parts of the United States in attendance. Discussion and consideration of many problems and subjects of direct interest to the stoker industry were divided between current fuel conservation programs and postwar plans for the industry.

The Association took under advisement the possibility of initiating a cooperative national advertising and sales promotional campaign on automatic coal heat.

The Association adopted standard codes for the testing and rating of underfeed stokers up to 1,200 pounds of coal per hour for both bituminous and anthracite machines.

J. M. McClintock, Chicago, manager of the stoker Division, Illinois Iron and Bolt Company, was re-elected president of the Association for the third term.

Walter Sormane, Indianapolis, sales manager, Schwitzer-Cummins Company, was re-elected vice president, and George W. Graham, Chicago, president, Eddy Stoker Corporation, was re-elected secretary-treasurer. Milton A. Young, Catskill, N. Y., sales manager, Catskill Metal Works, was re-elected chairman of the Association's Anthracite Section. Marc G. Bluth, Chicago, was reappointed executive secretary.

◆

Midwest Stoker Association

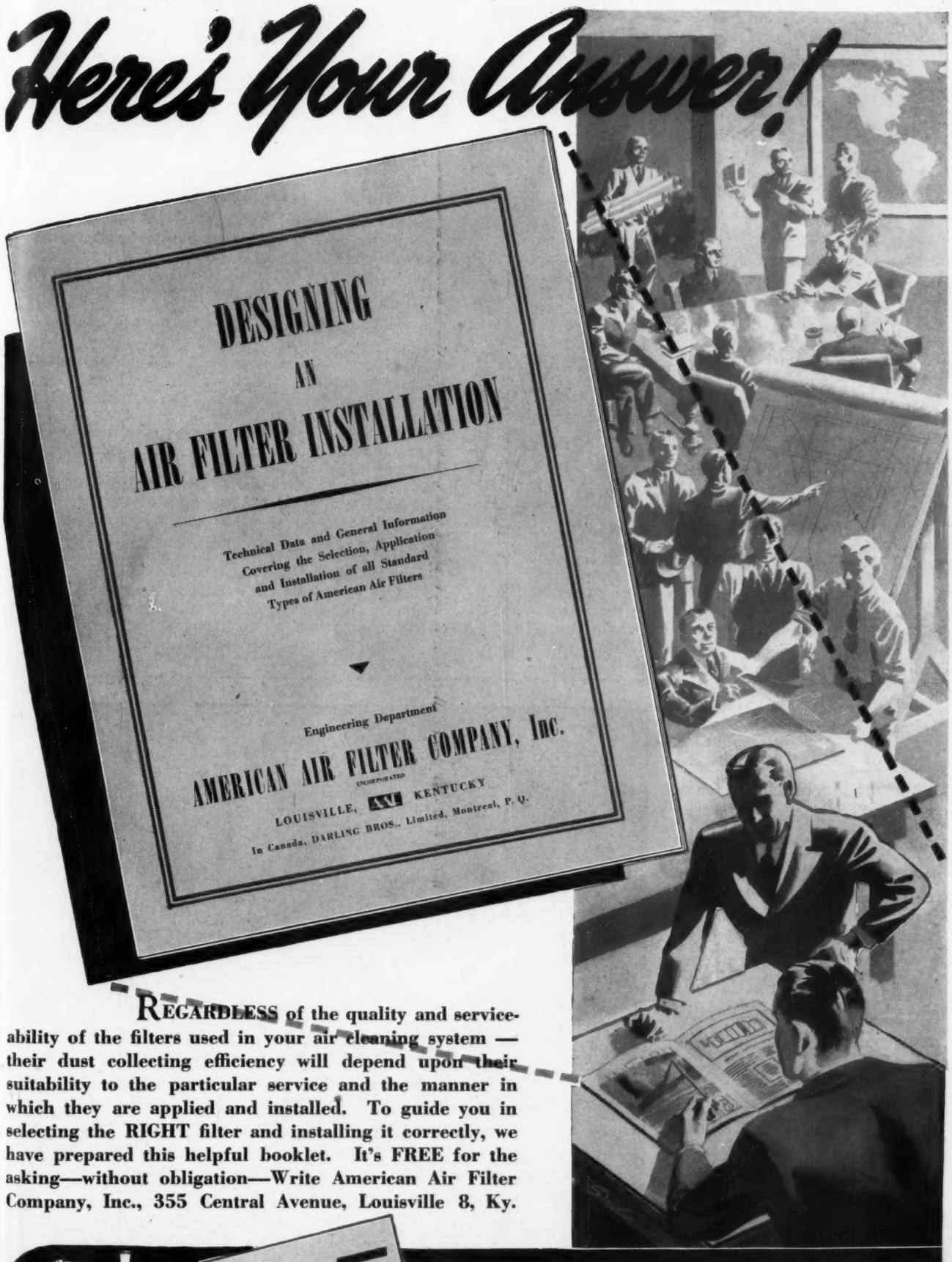
At the annual meeting of the Midwest Stoker Association held in Chicago early in July, the following officers were elected for the ensuing year:

President—J. J. Hayes, Manager, Auburn Stoker Company.
Vice President—W. J. O'Neil, Branch Manager, Iron Fireman Manufacturing Company.
Secretary-Treasurer—J. G. Beard, Assistant Manager, Stoker Division, Illinois Iron & Bolt Company.

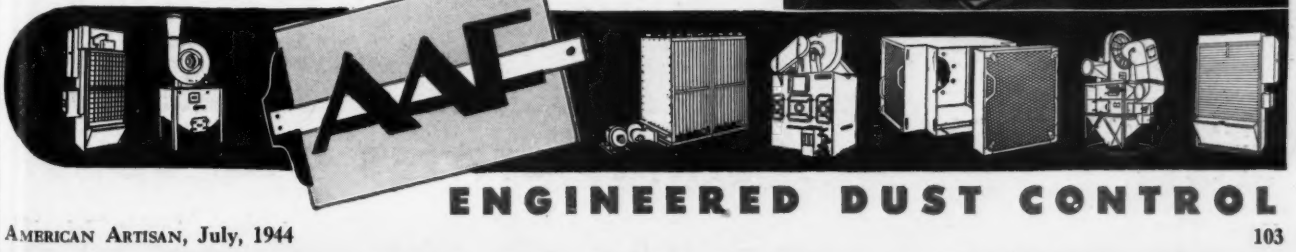
all of Chicago. At the same time several committees were appointed and active work will be started by the Midwest Stoker Association following a period of inactivity during the war.

One of the immediate projects which the Association is considering is a school for flat janitors and custodians on the operation and care of stokers. This is being undertaken in cooperation with the Chicago Flat Janitors Union. A written course will be prepared and classes will be held, probably during the month of August, where stoker engineers and servicemen will explain the operation of stokers in an effort to assist the janitors in securing a better understanding of their principles. This is being done in cooperation with the Fuel Conservation Program.

Here's Your Answer!



REGARDLESS of the quality and serviceability of the filters used in your air cleaning system — their dust collecting efficiency will depend upon their suitability to the particular service and the manner in which they are applied and installed. To guide you in selecting the RIGHT filter and installing it correctly, we have prepared this helpful booklet. It's FREE for the asking—without obligation—Write American Air Filter Company, Inc., 355 Central Avenue, Louisville 8, Ky.



ENGINEERED DUST CONTROL

With the Manufacturers

Alpha Metals New Corporate Title

Alpha Metals, Inc., is the new corporate title of the former Alpha Metal & Rollings Mills, Inc., of Brooklyn, N. Y.—producers and fabricators of lead products for four generations, according to Harold Shonberg, president and general manager.

Rolling is only one of the many processes employed in the manufacture of a vast variety of standard extruded, cast, stamped and fabricated solder and lead products.

With the adoption of the new name, an attractive new trade mark is being introduced. No change, however, has been made in the company policies or executives. The offices and plant of Alpha Metals, Inc., are located at 363 Hudson Avenue, Brooklyn 1, N. Y.

◆

Personnel

Mueller Promotes Haase

W. E. Haase, who joined **L. J. Mueller Furnace Company** of Milwaukee five years ago, has been made sales promotion manager. Mr. Haase heads a new department within the company for the purpose of more effectively carrying on sales promotion activities in view of post war market potentialities.

H. L. Charlton, president, announces the appointment of **John J. Hall** as vice-president and general manager of sales of the **Richmond Radiator Company** and the **U. S. Sanitary Manufacturing Company**; and the appointment of **Raymond L. Clewell** as manager of the Heating Division of Richmond Radiator Company. Both will headquarter at 535 Fifth Avenue, New York 17, N .Y.

Minneapolis-Honeywell Regulator Company announces the appointment of **George Guler** as sales manager of Airconditioning Controls Division, with headquarters at the company's home office in Minneapolis.

Guler will be succeeded in his present position as zone supervisor of Airconditioning Controls Sales in New York by **Lou Belford**, field supervisor of the company's Aero Division for the past two years. Belford has just returned from eight months of foreign service in the British Isles.

◆

Obituary

Frank R. Frost, 61, of Morewood Gardens, President of Superior Steel Corporation, Carnegie, died June 29 after an illness of several months.

Surviving Mr. Frost are his widow, Amy Lusk Frost, two daughters, his mother and a sister. The Frost home is at 1060 Morewood Avenue.

Mr. Frost joined the Superior Steel Corporation in 1917 and has held the office of president since 1927.

Mr. Frost was a member of the Board of Trustees of Allegheny College and a member of the Board of Directors of the American Iron and Steel Institute since 1934.

◆

Sylvester W. Kirk, 65, president of the **Kirk and Blum Manufacturing Co.**, Cincinnati, Ohio, died June 9 at Coral Gable, Fla., from a heart attack.

In 1907 he was cofounder of the company with Richard J. Blum, vice president. They started on Third Street and developed a business until it now occupies over three acres of floor space at their present location, 2638 Spring Grove Avenue, with several subsidiary plants.

Born in Cincinnati, Mr. Kirk was son of the late Patrick Kirk, who operated the sheet metal firm of P. Kirk and Company. Mr. Kirk was a life member of the Elks, Cincinnati Chamber of Commerce and had been active in several clubs. He is survived by his widow, Mrs. Louise Kirk.

★

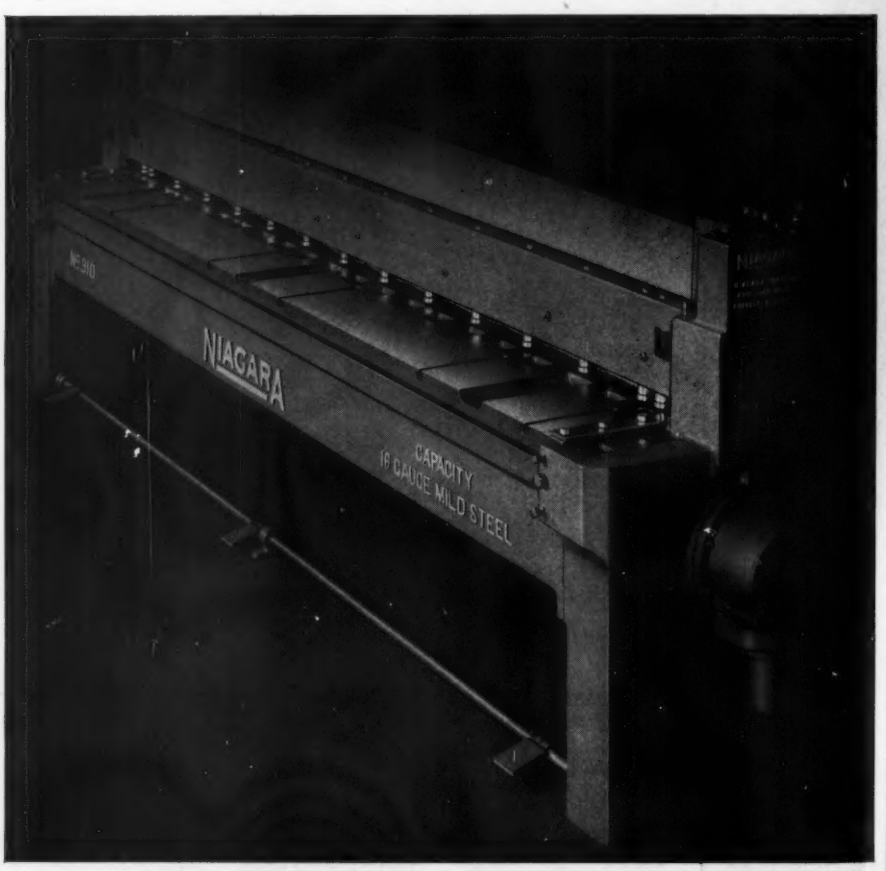
Wherever sheet metal is being sheared or formed, Niagara Power Squaring Shears and other machines are giving more production per hour.

In addition to speeding up production, they are also helping to keep wheels turning and planes flying by doing the many jobs essential to maintenance and repair.

The Series No. 3 Shear illustrated at right is just one of the many modern Niagara machines which are doing important work quicker and better.

• • •

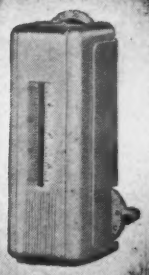
Niagara Machine & Tool Works, Buffalo, N. Y. District Offices: Detroit, Cleveland, New York.



BUY UNITED STATES WAR BONDS

Here's How

THE PERFEX COMBUSTION CONTROL SYSTEM SAVES FUEL



This *thermostatically regulated* system, installed *now* on home hand-fired heating plants, will save fuel right from the start of the next heating season . . . even during those early fall days when changing temperatures alter heating requirements every few hours. *It gets the most value out of the fuel,* because it tunes heating operation to heating needs all the way through the burning process. And many important factors of convenience and comfort accompany the fuel saving itself: Heating plant needs firing much less frequently, fire banks much longer . . . fuel burns more completely, and clinkers do not form, only a fine ash remains . . . this system offers greater satisfaction with more types of fuel, brings home hand-fired heating to a new level of efficiency. Write for complete information.

Be ready for the big summer-fall fuel-saving installation market.

An All-Star Team

▶ The Perfex Barometric Draft Control, with damper operator *attached,* operates noiselessly as indicated by the thermostat. Lightweight square vane allows 20% greater air intake . . . more positive checking action . . . rolling spring steel hinge . . . no bearings to wear. Damper operator features *hydraulic* action.

▶ The Perfex Limit Control, available for warm air, hot water or steam furnaces, automatically checks fire when furnace temperature reaches set maximum. Prevents damage from overheating, prevents overshooting of room temperatures.

▶ The Perfex Magic Dial Thermostat detects the slightest changes in room temperature—calls for heat when it is needed—automatically checks the fire when the *necessary and desired* heat has been delivered.

Perfex CORPORATION

420 W. OKLAHOMA AVE., MILWAUKEE 7, WIS.

Fuel-Saving Starts With CONTROL

WARTIME EXPERIENCE

points to

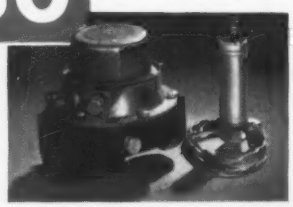
POSTWAR PERFECTION

Since automatic controls are essential to modern, mechanized warfare, the greater part of our production is devoted to turning out vitally necessary precision built equipment.

The specialized skills used to hasten the day of Victory will also serve after the peace is won. When that day comes, knowledge gained from wartime experience will be used to good advantage.

Automatic controls will give the American of tomorrow even higher standards of living and production efficiency than those now enjoyed. We will be ready to maintain our reputation as pioneers and leaders in this field.

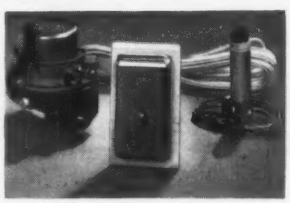
B-60 Four New Features



1. Compact, secure, tamper-proof cover.
2. Integral pilot valve assembly. Accessible.
3. Strong bodies; hi-tensile iron. High seating pressure and capacities.
4. Securely-locked binding posts. Terminals easily connected.

Write for Catalog 52.

B-60 Gas Controls equipped with heavy-duty pilot generator for liquified petroleum gases. Self-operating, on current from pilot burner thermocouple generator. All parts sealed. B-60 available in Package Set, with Trimtherm thermostat, 30 ft. wire, and generator. Complete, packaged Heat Control. (shown at right)



GENERAL CONTROLS
801 ALLEN AVENUE GLENDALE 1, CALIF.
Branches: Boston • New York • Detroit • Chicago • Dallas
Philadelphia • Cleveland • Atlanta • Denver • San Francisco

News Items . . . . . .

Tinning Tools

Ray E. Cast of Champaign advises that he has sold his business in Ogden, Illinois, but kept his tinning tools. He now offers the following: one 10-ft. Chicago steel brake; one 30-in. Niagara Sq. shear; one 30-in. Pexto slip roll; one 30-in. folder; one stove pipe crimpers, foot controlled; stakes, beaders, snips, pipe cutoff, and other tools in good shape. Not used in two years. Can be seen at 126 West Clark Street, Champaign, Illinois.

◆

Got a Decibel Meter?
(Sound Meter)

Do you have one that is for sale? In this issue we carry in the want-ad. section an advertisement by the Excel Heating & Air Conditioning Co., 3715-19 Belmont Avenue, Chicago 18, Ill. They want this Sound Meter to complete their laboratory apparatus for testing air moving equipment.

NATIONAL WAR FUND

The President, acting through the President's War Relief Control Board, has authorized two national appeals each year for war philanthropies—the **National War Fund** in the Fall and the American Red Cross in the Spring.

The **National War Fund** is served by 4,000,000 volunteer workers throughout the nation. The yearly appeal is carried on by 10,000 committees—these include Community Chests, County Committees and State War Chests. Virtually every local community in America participates in the **National War Fund** campaign—Alaska, Puerto Rico, Canal Zone and Hawaii also participate.

The **National War Fund** is the sole financing organization for 19 war-related agencies serving our fighting men and our allies—USO, United Seamen's Service, War Prisoners Aid, United China Relief, Russian War Relief and others.

National War Fund, Incorporated,
46 Cedar Street
New York 5, N. Y.

◆

How "Holders" Set Selling Prices

(*Continued from page* 75)

released for shipment to one destination at one time.

Galvanized Steel Sheets (Flat)

(a) **Order Quantity Extras**

(Less Carload Lots—Both standard and Odd Sizes):

7,000 pounds and over, but less than carload $0.35
Less than 7,000 pounds..... .50

If the total of all flat rolled items including roofings, sidings and wire products constitutes a carload quantity, extras for less than carload quantities do not apply. On less than carload shipments, the total weight of each class of sheets constitutes the order in determining the quantity extras to apply. Galvanized Flat and Formed Sheets cannot be combined in determining quantity extras on less carload shipments.

(b) **Item Quantity Extras**

(Carload and Less Carload):

1,500 pounds or 10 standard bundles..... Base
Under 1,500 pounds and under 10 bundles to 1,000 pounds..... $0.10
Under 1,000 pounds to 500 pounds..... .35
Under 500 pounds..... .75

Galvannealed Sheets

(a) **Order Quantity Extras**

10,000 pounds or more, but less than carload..$0.10
Less than 10,000 pounds..... .30

(b) **Odd Size Extra** (Carload or less Carload Quantity)

Under 1,500 pounds per item.....$0.10
Exact Quantity ..... .10

◆

Amendments, Interpretations

(*Continued from page* 47)

cluded in figuring the cost. This would seem to indicate that shop labor costs of fabricating such items as duct work or cyclones, etc., must be included in the calculated costs.

The interpretation also points out that this rule applies whether the owner of the plant uses his own employees to do the installation work or hires an independent contractor to supply labor for the installation. It also applies where the owner of the plant gets an independent contractor to furnish the materials and labor for the job, and where the owner of plant buys a machine or other article and has the seller do the work of installation.

The same general rules apply to determining the cost of materials needed for installation or relocation of equipment, where such materials are brought under procedures established in Direction No. 15 to CMP Regulation No. 5. This direction permits acquisition of materials costing $500 or less for the relocation of equipment which a manufacturer has in his plant.

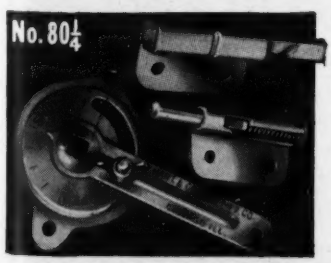
H&C DAMPER REGULATOR SETS

ECONOMY TYPE. Three ways to install: 1. With lock nut but without handle (for tamper-proof setting). 2. With handle and lock nut. 3. With handle and wing nut. Nut prevents damper vibration. Handle always indicates position of damper (Patent 2,146,142). Furnished with handy snap end bearing. Complete set in carton. Made only with ¼" bearings.

LIST PRICE.....No. 40¼S.....$0.30

BRACKET TYPE. Nut holds damper securely, preventing vibration. Handle which indicates position of damper, may be left in place permanently or removed after adjustment (to prevent tampering). Snap End Bearing on ¼" size, Solid Bearing on ⅜" size. Each set individually packaged.

LIST PRICES.....No. 50¼.....$0.40
No. 50⅜ $0.60



DISK TYPE. Like all H&C sets, this set is equally adaptable to splitter or regular dampers. Snap End Bearing on ¼" size, Solid Bearing on ⅜" size. All parts are rust proofed. Complete set in carton.

LIST PRICES.....No. 80¼.....$0.40
No. 80⅜.....$0.60

See your jobber or write for literature and sample.

HART & COOLEY MANUFACTURING CO.
HOLLAND, MICH. · PHILADELPHIA OFFICE: 1600 ARCH ST.

H&C NO. 210 "NO-FLEX" FLOOR REGISTER

BEST BUY
BOTH NOW and for POST WAR!

Any way you look at it, the H&C No. 210 "NO-FLEX" is unquestionably the finest floor register available; and there's little likelihood that anything will emerge to top it after the war. Here is superior quality for which no premium price is asked; and that means a better buy for both you and your customers.

After this war is over, your source of register supply will mean more than ever. May we suggest that you decide now to standardize on H&C. With unmatched facilities for research and manufacture you can bet your bottom dollar that when better registers are built, H&C will build them; and when registers are most needed H&C will have them.

Available today for all essential needs: Gravity items Nos. 210, 265, 130, 330, 623, 653, 250, 2250. A. C. Designs Nos. 69, 74, 75 and 88. Also complete accessory line. See catalog 42 for details.

H&C
HART & COOLEY MANUFACTURING CO.
World's Largest Manufacturers of Registers, Grilles, Furnace Accessories
HOLLAND • MICHIGAN

IT'S MADE FROM A SECRET FORMULA BUT THERE'S NO SECRET ABOUT

THARCO'S SUPERIORITY!

YES, sir, Tharco Asbestos Furnace Cement is made from an exclusive Armstrong formula that considers every on-the-job problem of furnace manufacturers and dealers. Tharco works easily, stands up under the toughest possible service conditions. It is the furnace cement made to furnace men's own specifications! Use Tharco and you use the industry's accepted standard.

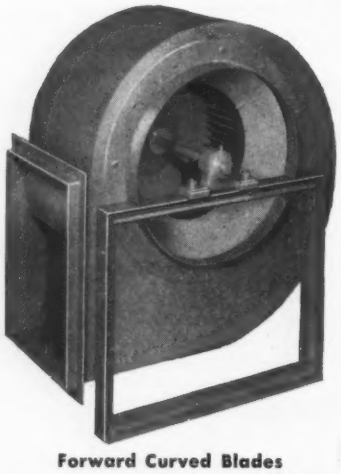
Send for free copies of the valuable folder,
"The Proper Use and Care of Furnace Cement"

THE ARMSTRONG COMPANY

Detroit 241 S. Post Avenue — **Dallas** 319 S. Crowdus Street — **Chicago** 4065 S. La Salle Street

The Complete Story is Here

**In the New "Blue Book"
Bulletin SC-101
and the Supplemental
Capacity and Dimension Tables
Bulletin SC-102**



Forward Curved Blades

A Full Line

Forward and Backward Curved Blades

All Drive Arrangements

Surprisingly Quick Deliveries

GENERAL BLOWER CO.

400 N. Peoria St. — **Phone Canal 6340**
Chicago 22, Ill.

**New York — Philadelphia — Pittsburgh
Cleveland — Detroit**

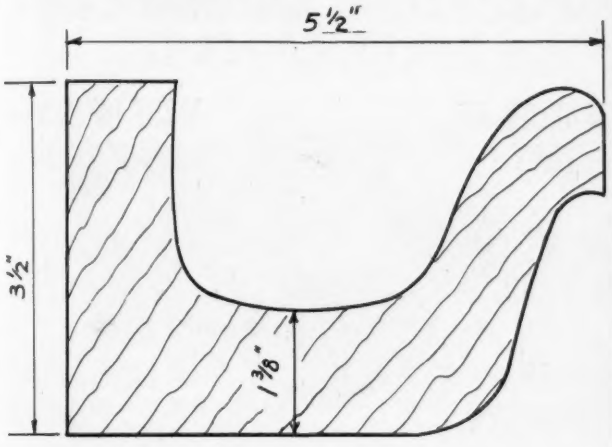
Illustrated: Backward Curved Blades

Fairlington Housing Project

(*Continued from page* 79)

the wood spout and is a soldered part of the metal tube.

There were several miscellaneous metal pieces for the drainage system. Where a main wood gutter ends at a gable a metal gutter end was provided, shaped to the contour of the gutter. There were round metal tubes for porch roof gutters where no downspout was used. The downspouts are held to the wall with metal



SECTION WOOD GUTTER MAIN ROOFS

bands held by Rawlplugs; these bands are plain surfaces with a raised top and bottom edge, made of 26-gauge galvanized steel, painted.

The main gutter section was shaped and dimensioned as shown in the gutter sketch. Gutters from the front entrance roofs were approximately half this size.

Because of the time required for construction and the vast quantities of materials used, the Linck company kept two trucks busy most of the time distributing slate and other materials to the job and to stock piles around the project.

◆

On Our Industry's Front

(*Continued from page* 51)

tolerance is permitted only to take care of uncontrollable manufacturing variations.

The Committee recommended that this interpretation be formally incorporated into the order.

The demand of the United Slate, Tile and Composition Roofers Damp and Waterproof Workers Association for 45 pound, 3 square rolls in place of 60 pound, 4 square rolls was presented to the Committee by a representative of the Industrial Health and Safety Section of the Office of Labor Production. The union states that the older men now employed because of manpower shortages are physically unable to handle the heavier rolls and that accidents have increased

Ease of installation—simple operation—positive safety—trouble-free service . . . these are popular Gleason-Avery features which appeal to contractors, dealers and home owners alike.

✔ The G-A Damper Motor can be mounted in any position. Two-wire low voltage control.

✔ Finger-tip adjustments and synchronized settings make the G-A Thermostat easy to set and read. One-degree sensitivity.

✔ The G-A Straight Line Control means no sprockets or rotating arms to get out of order . . . no chain-tangling.

✔ No danger from overheating. In case of electric power failure, the improved G-A Spring Return closes draft and opens check automatically . . . instantly.

✔ Gleason-Avery Thermostats are smartly styled in lustrous, marproof Mirror-Lite finish.

Approved by Anthracite Industries Laboratory

Gleason-Avery, INC.
AUBURN, N. Y.
A RELIABLE NAME IN TEMPERATURE CONTROLS

A·R·A SHEETS

for Non-Metal Duct Work in the Heating, Ventilating and Air Conditioning Field

Keep an ample supply of these nationally known, easy working sheets in stock for fabricating duct work of every type, as illustrated.

Don't wait until the last minute for any kind of sheets in this changeable market.

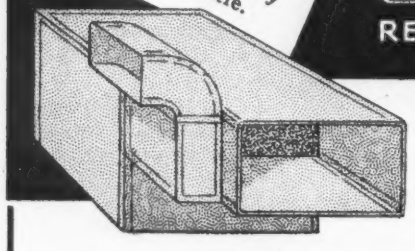
Your jobber can now supply you with preferred A.R.A. Sheets and in any quantity.

Asbestos clad A.R.A. Sheets are tough yet flexible—rigid but not brittle and moisture-proofed — will not dry out, crack, crumble or chip. A.R.A. Sheets have a high insulating value (K. .45 B.T.U.) — good sound deadening properties — and they deaden metallic rattle.

SQUARE

ROUND

RECTANGULAR



Intricate and unusual fittings can easily be fabricated from A.R.A. Sheets.

CARTON CONTENTS

20 Sheets 33" x48" Per Carton
40 Sheets 16½"x48" Per Carton

Shipping Weight
Approximately 100 lbs. per Carton

Get genuine A.R.A. Sheets from your Jobber.

GRANT WILSON, INC.

141 West Jackson Blvd., Chicago 4, Illinois

Fuel-Saving Starts With CONTROL

Field Barometric DRAFT CONTROL

BALANCED AT FACTORY

MADE OF HEAVY MATERIAL

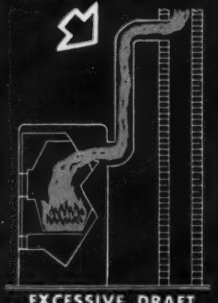
DOESN'T CLOG OR WARP

ROCKER TYPE FULCRUM

QUICKLY RESPONSIVE

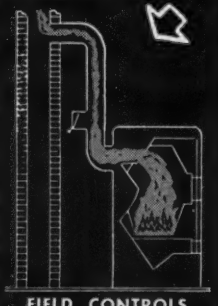
FREE SMOKE PASSAGE

HERE'S YOUR PROBLEM . . .



EXCESSIVE DRAFT WASTES FUEL

HERE'S YOUR ANSWER . . .



FIELD CONTROLS CONSERVE FUEL

★ **The delicately balanced, but strongly built Field Barometric Draft Control compensates immediately for the slightest change in barometric pressure. Through all types of weather, it maintains the minimum draft necessary for proper combustion.**

★ **A Field Control provides fuel savings ranging up to 25%. There is a model adapted to any type or size of heating installation . . . coal or oil. The domestic controls can be installed in as little as thirty minutes; installation requires only a tin snips, a carpenter's spirit level, a little "know-how."**

★ **Write today for full, free facts. The profit margin on a Field installation is definitely worth while. They require no servicing. The market in your community is almost unlimited, as nine out of ten installations need a money-saving, fuel-saving Field Barometric Draft Control.**

FIELD CONTROL DIVISION MENDOTA, ILLINOIS

due to the necessity for lifting these rolls. Particular difficulty is encountered on the West Coast. Committee members pointed out that rolls would not have to be lifted if the "rolling and brooming" method of laying the roofing were used instead of the "setting" method. The rolling method is preferable, they said. The Office of Labor Production representative stated that men who have been trained for 30 to 35 years in the setting method cannot make a change to another method overnight.

◆

National Warm Air Mid-Year Meeting

(*Continued from page* 88)

production of steel furnaces. It is our expectation and hope that as cut-backs in military contracts do occur, there will be a gradual increase of materials and facilities for steel furnaces production.

New Members

At the Wednesday afternoon session, presided over by F. E. Mehrings, it was announced that the following new manufacturer members of the association had been secured: Chicago Furnace & Supply Co., Chicago; Grossenbacher Furnace Co., St. Louis; Skuttle Manufacturing Co., Detroit; Standard Furnace & Supply Co., Omaha; Viking Mfg. Corp., Dayton; Wilson, Inc., Grant, Chicago.

Gas Utilities' Postwar Plans

Most gas companies are looking forward to great acceptance of gas heating from the public and expect the swing to be to complete package units away from conversion burners and mostly of the forced warm air type, according to E. B. Voneman, Montana-Dakota Utilities Co. He based this statement not only on his own company's experience in its area, but also on a survey he made of gas utilities throughout the country. He stated also that these utilities believed in summer cooling as a load builder and all are anxious to get behind gas heating and summer cooling in postwar. In the meantime, he advised manufacturers to see that their distributors and dealers were getting their product story and information on their postwar plans so as to be ready to go when the opportunity arrived.

Practical Postwar Planning

Francis Juraschek, manager, Commercial Research Div., Carnegie-Illinois Steel Corp., advised a more realistic and practical analysis of postwar opportunities than many which have appeared in print. While it may be true, he pointed out, that this country can use over 1,000,000 new homes per year for the decade following victory, it will build them only if prices are right and many of the former ills, restrictions and limitations of the building industry are eliminated. Nevertheless, he expects, on the basis of past sales and future estimates, an $800,000,000 warm air heating volume in ten years following the war from new construction and a great opportunity in replacement work in existing homes. After discounting many of the figures used by some postwar planners, he feels, realistically, that the warm air industry should be

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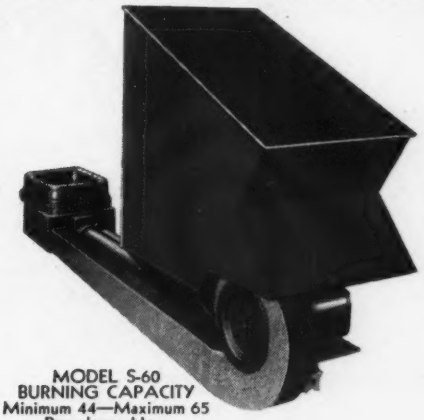
WORLD'S GREATEST STOKER VALUE



MODEL S-60
BURNING CAPACITY
Minimum 44—Maximum 65
Pounds per Hour
HOPPER CAPACITY—700 lbs.
RETORT DIMENSIONS 14"x 14"

Automatic Coal Burning that's EASY TO SELL

This rugged, heavy duty Model S-60 leads STOKERATOR'S complete industrial-commercial line. It has all the qualities that have made STOKERATOR famous as "the stoker that's easy to sell"—finest engineering, dependable performance, sturdy construction, and lowest cost with longest distributor-dealer margin.

Send your order now! Get those "25 tons or more per year" jobs.

TOMORROW

Tomorrow's STOKERATORS, with refinements and improvements that mean even greater sales appeal, are ready for production as soon as restrictions are lifted. STOKERATOR'S ability to satisfy is proved in thousands of installations. And remember:

STOKERATOR is the line designed and built to give the consumer *more* for less money, but also to give the distributor and dealer better profit.

Inquiries will be answered promptly.

STOKERATOR

NORTHERN STEEL & STOKER CORP.

3100 PROSPECT ROAD PEORIA 4, ILLINOIS

VITROLINER
Porcelain Enameled SMOKE JACKS

Porcelain Enameled Smoke Jacks are now specified in certain areas for Smoke Jack replacement and new construction.

Vitroliner meets Government specifications and is listed by Underwriters Laboratories for all fuels.

Write for prices and details on Government work.

CONDENSATION ENGINEERING CORPORATION
122 S. Michigan Ave., Peoples Gas Bldg., Chicago 3, Ill.

able to do annually after the war two to three times the volume done in 1939.

Entertainment

There was no golf tournament this meeting as in former years, but a luncheon was addressed by Col. Jack Major, who spoke on "Jeeps, Japs and Jokes," sometimes funny, but completely interesting throughout. An informal reception and cocktail party was held on the evening of the first day.

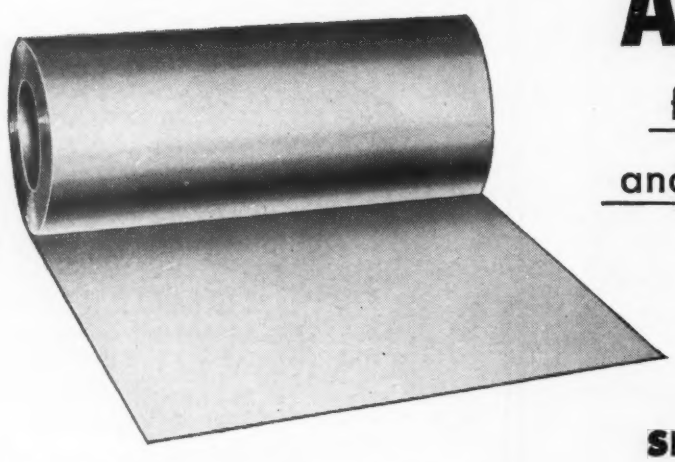
◆

The Furnace Situation on July 1

(*Continued from page* 52)

000 furnaces of which most are the solid fuel type. The Office of Civilian Requirements is requesting 55,000 units but this program has not been approved as of this date. Assuming this number should be extended over a full year, civilian replacement would be in line to get 220,000 furnaces during the twelve months period ending June 30, 1945.

What about the availability of material in the future? It isn't possible to prognosticate with any degree of accuracy because under a wartime economy changes happen so quickly that we can only surmise or perhaps guess what will be the future course. Right now it looks like the balance of the year will be pretty much governed by what happened in the second quar-



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for essential maintenance and repair

Follansbee
8 pound coated
SEAMLESS TERNE ROOFING

Carried in stock by leading jobbers

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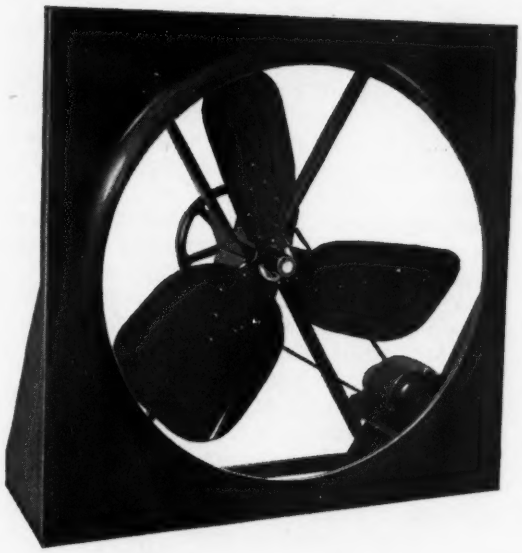
ALLOY BLOOMS, BILLETS, BARS, SHEETS & STRIP • COLD ROLLED SHEETS & STRIP
POLISHED BLUE SHEETS • ELECTRICAL SHEETS & STRIP • SEAMLESS TERNE ROLL ROOFING



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BETTER WORKING CONDITIONS
. . . to
IMPROVE PLANT EFFICIENCY

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Industrial and Commercial Fans

LAU propeller type air circulating fans have many applications for maintaining constant temperatures—providing fresh air in confined enclosures — removing stale, excessively hot, or dust-laden air; fumes; smoke; etc. Available on priority ratings for reasonably prompt delivery. Plan your requirements ahead. Now is the time to schedule summer installations.

FURNISHED IN 5 DIAMETERS

Fan Size	C.F.M.	H.P.
22"	3,800	1/6
30"	7,100	1/4
36"	9,000	1/4
36"	10,150	1/3
42"	11,300	1/4
42"	12,600	1/3
48"	15,050	1/2
48"	18,000	3/4

Write us direct or contact your nearest jobber.

THE LAU BLOWER COMPANY
DAYTON 7, OHIO
WORLD'S LARGEST MANUFACTURERS OF FURNACE BLOWERS

Engineers and fabricators of general Air Handling Equipment
Single Inlet and Double Inlet Blowers • Propeller Fans • Accessories

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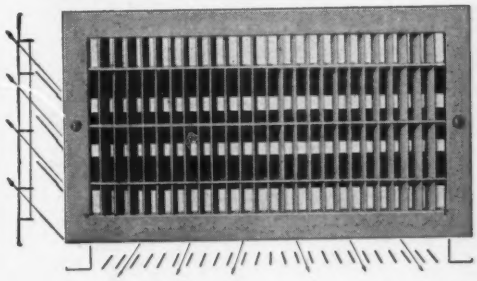
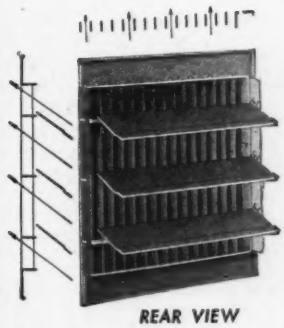
"Fabrikated" REG U.S. PAT OFF.
DIRECTED AIR FLOW GRILLES with Deflecting Vanes



No. 321A

Gives Compound Direction to Air Flows with Certainty

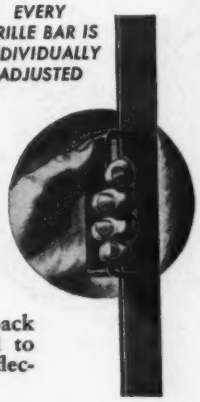
Each grille bar can be adjusted individually to direct air flow to the right, left or fanwise as illustrated. Adjustment can be made either before or after installing. Grille bars remain firmly in position without locking, and will not vibrate nor rattle.



REAR VIEW

Horizontal deflecting vanes in back may be individually adjusted to give upward or downward deflection to air flow.

EVERY GRILLE BAR IS INDIVIDUALLY ADJUSTED



Send for Catalog No. 41-AC
641

THE INDEPENDENT REGISTER CO.
3747 E. 93rd STREET • CLEVELAND, OHIO

ter. However, everything is dependent upon the outcome of the invasion in Europe.

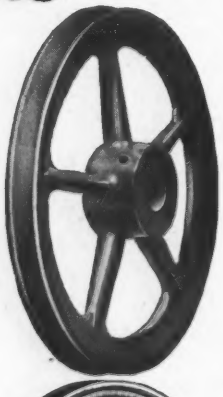
Forecasts of future furnace production should also take into consideration any policy for the resumption or increase of production with respect to labor areas which has been recently announced. The policy stipulates:

1. That approved production programs be placed, as far as possible, in Group 3 and Group 4 labor areas.
2. That portions of such programs may be put into Group 2 labor areas if it can be shown that this can be done without interference with Military production. Any such action must have the approval of the appropriate Vice Chairman.
3. That resumptions or expansions of production may be authorized for Group 1 labor areas only after clearance and approval by the Area Production Urgency Committee. Where no such committee exists, approval by the Executive Vice Chairman is required.
4. That these limitations shall not apply to plants whose total employment, after the proposed production increases have been effected will not exceed (a) 50 persons, in the critical West Coast labor areas of San Diego, Los Angeles, San Francisco, Portland and Seattle, and (b) 100 persons elsewhere in the United States.

Now I want to call to your attention what may or may not be some pending problems that should be given consideration. One of the problems concerns production of small sized furnaces. Reports show that out of 108 producers in January only 44 showed production of 18″ and 20″ furnaces. Of the same number producing in February and March only 49 and 42, respectively, made these small sized units.

MAUREY V-PULLEYS

provide a L-O-N-G step toward TROUBLE FREE Performance



Our long experience in designing and manufacturing V-Pulleys, our complete understanding of their uses, and the finest materials—all are combined in making Maurey V-Pulleys the very best for use in Air Conditioning and Refrigeration Systems as well as for Fan and Blower insulations.

For unfailing, continuous operation be sure to specify Maurey V-Pulleys.

MAUREY MANUFACTURING CORP.

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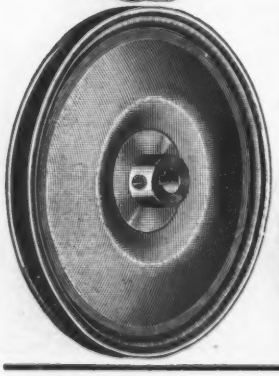
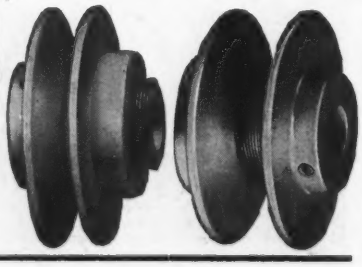
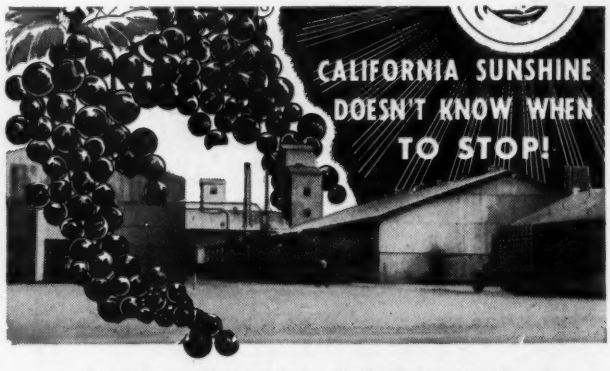
CHICAGO 16, ILLINOIS







In the making of wine the period of fermentation is critical and the temperature of the fermenting grapes must be under control if good wines are to be produced. In California's great Central Valley the temperatures are not infrequently around 115°F for fairly long periods. Handling large quantities of grapes and keeping the temperature down during fermentation becomes an engineering problem. Such was the problem that faced California Grape Products Company producers of *Victor H.O.L. Brand California Wines.* At their winery near Delano, California fermentation took place in large concrete vats in which the greater part of the heat was dissipated to water circulated through copper coils in the tanks. Some heat, however, rose to the top of the building where the heat from the sun is also considerable. California Grape Products Company engineers recognized this and wished to provide some positive means of heat removal independent of wind or weather. Allen Corporation engineers were consulted. As a result Allen Type "H" Roof Fans were installed. Temperatures are now held at levels that insure a good product and controllable by the Vintner in charge. *The Allen Corporation, 9751 Erwin Avenue, Detroit 13, Michigan.*

THE *Allen* CORPORATION

ENGINEERED VENTILATION FOR INDUSTRY

CAST IRON FURNACES

STEEL FURNACES

WINTER AIR CONDITIONERS

OIL BURNERS

BLOWERS

STOKERS

HUMIDIFIERS

Yes! We're Planning The Most Attractive PREMIER Line You've Ever Seen!

There'll be new furnaces and new complete package units in this greater PREMIER Line. There'll be many refinements in the standard PREMIER units which have proven so popular and satisfactory in the past. In addition we are restyling many units, to make them more attractive and more salable than ever before.

Best of all, the PREMIER Line will be more complete than ever before, with cooling equipment, registers, ductwork, automatic controls — everything in fact that's needed for a complete job. And with this larger line we're going to have a larger program of dealer cooperation, with immensely valuable new selling, advertising, and engineering helps.

Why not apply now for the *exclusive* PREMIER post-war franchise in your territory?

Also:

COOLING EQUIPMENT
REGISTERS
DUCTWORK
AUTOMATIC CONTROLS

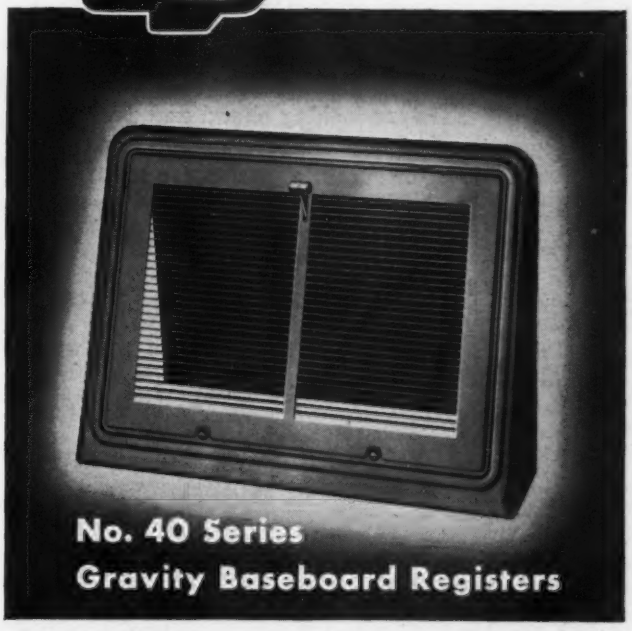
PREMIER FURNACE CO.
Dowagiac, Michigan

PREMIER

The Year 'Round Line

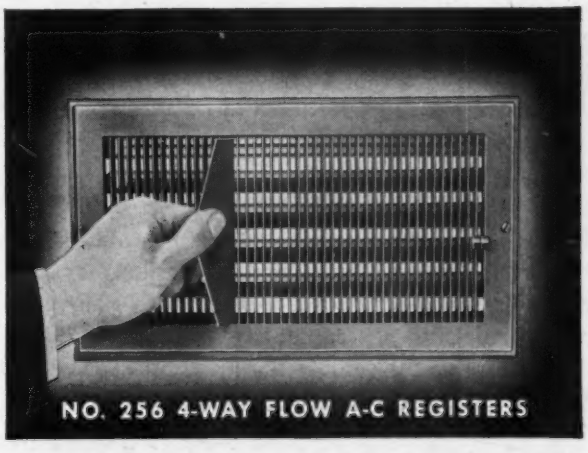
U S LEADS

IN THE GRAVITY AND AIR CONDITIONING FIELD



No. 40 Series
Gravity Baseboard Registers

For matchless BEAUTY and the highest EFFICIENCY U. S. No. 40 Series LEADS THE GRAVITY BASEBOARD REGISTERS! Dignified, Metalac Finish Blends with every Surrounding. Neatest—most modern design. Two Piece Construction with Removable Center and Engaging Buttons. Grille bars easily Set for upward or downward flow. Maximum free area, non-vision of interior.



NO. 256 4-WAY FLOW A-C REGISTERS

The IDEAL companion to MODERN forced air heating. Vertical grille bars Easily Set to any desired Right or Left flow with bending wrench, as shown. Lever-operated horizontal rear valves for up or down deflection. BEAUTIFULLY DESIGNED AND may be FINISHED to complement any interior!

We are Producing Under W.P.B. Limitation Orders Every REGISTER and RETURN AIR INTAKE We Are Allowed to Produce!

UNITED STATES REGISTER CO.
BATTLE CREEK, MICHIGAN
MINNEAPOLIS • KANSAS CITY • ALBANY

HEATING, VENTILATING *and* AIR-CONDITIONING EQUIPMENT *for* TOMORROW *is being planned Today*

Foresighted manufacturers are planning and designing heating, ventilating and air-conditioning equipment to sell in postwar markets. Many improvements and refinements will be incorporated. Dependable motor power must be given careful consideration, and Wagner engineers too are looking ahead and designing motors that will do an economical and dependable job on such new postwar equipment.

Wagner Type RP Squirrel-Cage motors are made in several electrical types, varied as to torque and current characteristics to take care of a wide variety of applications: 2- and 3-phase; 1/6- to 400-hp.

Consider Wagner MOTORS

IN YOUR POSTWAR PLANS

Wagner engineers are making a straight-from-the-shoulder offer to help you—to make your problem their problem—to assist you in every way possible to turn out exactly what should be the motor drive on your apparatus.

If Your Equipment Goes to War

If the equipment you are manufacturing is essential to war production plants, housing projects, or to the armed forces, Wagner will gladly figure with you on your requirements. Consult the nearest of Wagner's 29 branch offices, located in principal cities and manned by trained field engineers.

MOTORS
TRANSFORMERS
UNIT SUBSTATIONS
INDUSTRIAL BRAKES
BRAKE LINING

M44-12B

Write FOR BULLETINS

Bulletins MU-183 and MU-182 describe and illustrate the complete line of Wagner motors. Bulletins MU-7B and MU-30B give complete service instructions.

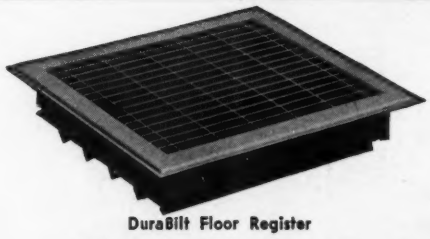
BACK THE ATTACK — BUY U. S. WAR BONDS

Wagner Electric Corporation
ESTABLISHED 1891
6371 Plymouth Avenue, St. Louis 14, Mo., U. S. A.
ELECTRICAL AND AUTOMOTIVE PRODUCTS

These facts raise the question—is there enough of such production to satisfy Claimant Agency requirements?

In peacetime operations the furnace manufacturer's production was distributed percentagewise by size of furnace. For example, a certain percentage of the output was made up of small sized furnaces—18″ and 20″. A considerably larger percentage was composed of the more popular 22″ and 24″ or comparable sizes and the balance of the production ranged over bigger furnaces. Under wartime operations there has been much greater demand for 18″ and 20″ furnaces for the small type of house now being constructed. From the profit angle the small sized unit does not shape up too well. It was used in peacetime as a leader and measured in terms of cost of production there is not too much difference between a 20″ and a 22″ job. It is very important that the production of these small units be maintained during the period when housing requirements should be met. All manufacturers should assume a certain amount of the burden of a more or less unprofitable item and do it voluntarily. The industry should not let a few manufacturers carry the load of producing all of the housing units that are required. If such a situation should prevail it would disrupt the distribution set up and might require some action on the part of the War Production Board; it might even require scheduling to insure an equal production of 18″ and 20″ furnaces.

Another problem pertains to distribution. It is hoped that all manufacturers will exert every possible effort to maintain the same distribution areas that were covered prior to the war. Of course, the same *volume* of distribution cannot be continued because production is cut down but if every manufacturer attempts to serve the same trade he served dur-



DuraBilt Floor Register

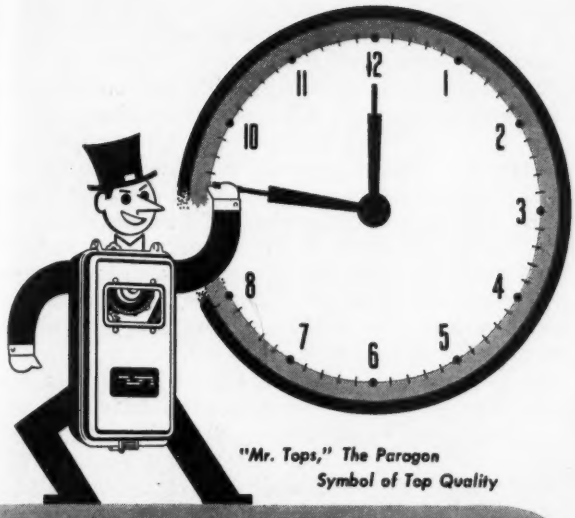
DuraBilt Floor Registers & Cold Air Faces

- ★ Cross-locked assembly for surplus strength and rigidity.
- ★ All-steel flat bars—mortised at joints, close fitted, perfectly aligned and level.
- ★ Face securely interlocked to frame by tenons at every connection.
- ★ Greater open capacity for air-flow.
- ★ Close mesh design ($\frac{7}{16}$″ x $1\frac{11}{16}$″ openings) to exclude french heels and small objects, ample for free air flow.

DuraBilt Cold Air Return

THE AUER REGISTER COMPANY, Cleveland, O.

AUER REGISTERS
& GRILLES for Air Conditioning and Gravity



"Mr. Tops," The Paragon Symbol of Top Quality

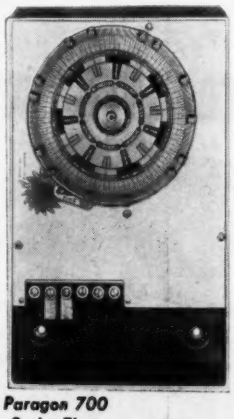
LET "MR. TOPS" CONTROL YOUR TIMING

of AUTOMATIC HEATING, VENTILATING, LIGHTING, PUMPING OR FLUSHING OPERATIONS . . .

Paragon 700 Series Time Switches are equipped with 6" calendar dials which make one complete revolution every 7 days. Dial trippers can be independently set for different daily ON and OFF schedules. Settings can be made in advance for an entire week. Any day or days operations may be omitted entirely on a pre-set program.

Each day of week clearly separated from other days; graduated into hours and half hours; day and night distinctly separated. Operations from ON to OFF or from OFF to ON can be set as close as three hours apart and can be separately adjusted throughout each 24 hour day in the week.

Write for a complete bulletin.

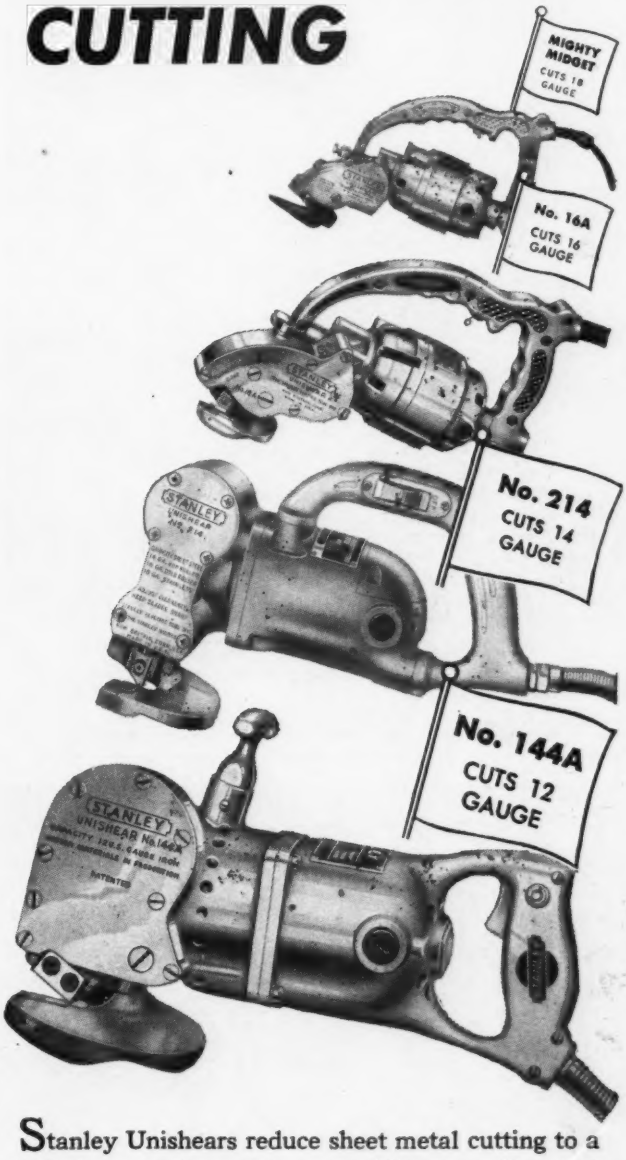


Paragon 700 Series Time Switch

PARAGON ELECTRIC COMPANY
719 Old Colony Bldg.
Chicago 5, Illinois

Paragon Chicago
BUILDERS OF ELECTRICAL EQUIPMENT SINCE 1905

OUT IN FRONT for SHEET METAL CUTTING



Stanley Unishears reduce sheet metal cutting to a simple operation. They can follow any line that comes off the drafting board—without wasting a single ounce of metal.

With a little practice anyone—man or woman—can cut straight or curved lines, angles and complicated notches quickly, without burrs or distortion of the metal. Capacities from 18 gauge up to 10 gauge on hot rolled steel or galvanized iron. Ask your distributor for complete information. Stanley Electric Tool Division, The Stanley Works, New Britain, Connecticut.

STANLEY Trade Mark

STANLEY UNISHEARS
THE ELECTRICALLY DRIVEN HAND SHEARS

BRUNDAGE—

GIVES YOU THESE FEATURES!

★ Compact unit easily attached to furnace

★ Automatic control . . . quiet operation.

★ "DUO - Multiblade Wheel"

★ Variable speed motor pulley

Brundage Economy Blower for year 'round comfort

WHEN you install Brundage Blowers you insure years of economical, trouble-free operation. Cushioned bronze bearings, enclosed in self-aligning, self-lubricating housings. Ask your jobber about the complete Brundage line, or write directly to us.

The BRUNDAGE CO.

BLOWER SPECIALISTS

KALAMAZOO . . . 11 . . . MICHIGAN

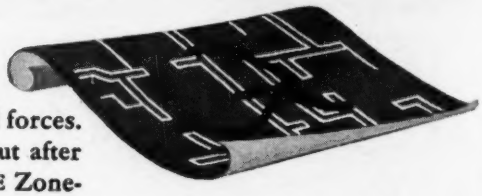
ing peacetime then all parts of the country will get some furnaces. Should manufacturers, for economic reasons, change their distribution areas and either discontinue jobber sales and only serve the dealer, then some sections of the country become hardship areas where no furnaces are available for essential replacement. In this connection I would like to point out that sooner or later the war will end and with its ending will come a resumption of peacetime distribution. It should work to the advantage of manufacturers to have as many of their former customers as possible at that time since it will enable them to resume normal operations at an earlier date without having to build up new distribution outlets.

In closing I would like to point out that operations under War Production Board control have worked to the benefit of your industry. If the War Production Board had not been in existence, equitable distribution of materials would have been impossible and it is safe to assume that some manufacturers would have gotten their supply and others would have been out of luck.

The continuance of materials and production control during the adjustment period or during the return to peacetime production will assure an orderly retreat to normal operations. The extent of such control would be determined by necessity. It would be very convenient as well as fair to allow all manufacturers to resume production at the same time but such, of course, is a physical impossibility owing to the varying degrees to which companies are engaged in essential war work. It goes without saying that some hardship will exist but it is hoped that in administering the necessary control a minimum of inconvenience will be wrought upon the industry.

TODAY WAR WEAPONS

TOMORROW *Payne* ZONE-CONDITIONING



There's only one important job now . . . backing up the armed forces. We've been concentrating on it for more than two years. But after victory, our dealers will have a new "sales weapon": PAYNE Zone-Conditioning, post-war successor to old-fashioned central heating. ★ Meanwhile, let's all buy more, and more, War Bonds.

ARMY (E) NAVY

PAYNEHEAT

30 YEARS OF LEADERSHIP

Payne FURNACE & SUPPLY CO., INC., BEVERLY HILLS, CALIF.

GAS FUEL (HAS) EVERYTHING

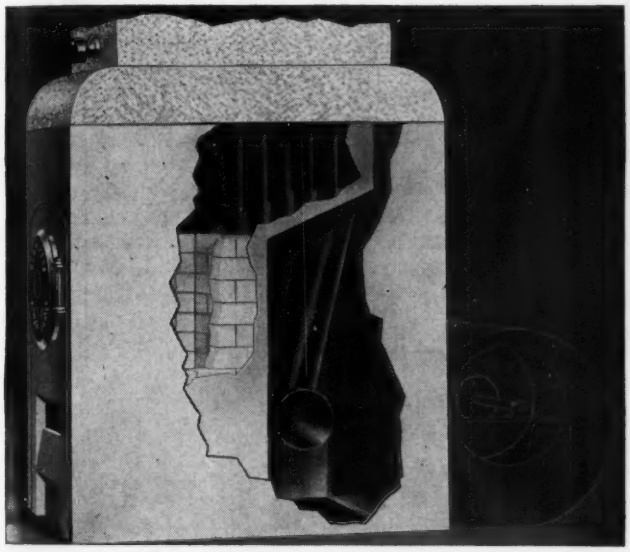
REQUEST NEW ZONE-CONDITIONING FOLDER

. . . just published for the information of families who plan to build or remodel. Write for sample copy.

© 1944 PAYNE FURNACE & SUPPLY CO., INC.

Now available!

BERTOSSA POWER HEATERS IN LIMITED QUANTITIES TO QUALIFIED DEALERS....



Bertossa heating units for the past 2½ years have been supplying heat and air conditioning to navy bases, army camps and war plants.

But government requirements today have largely been filled. A limited supply of Bertossa Heating units are now available on priority to accredited dealers.

Leading engineers and architects have long appreciated the efficiency of Bertossa heating units. Built in a wide range of sizes from 150,000 to 2,800,000 B.T.U.'s, Bertossa units have an unusually compact arrangement of blower and heating unit. They have a unique type of down draft flue. They have 90% direct heating surface, and they can be easily adapted to complete air conditioning.

Your territory may be open—write us today.

BERTOSSA

Manufactured by JACKSON & CHURCH CO.
SAGINAW, MICHIGAN

Dependable HEATERS *use* *Dependable* OIL CONTROLS

MODEL 240-U CONSTANT LEVEL OIL CONTROL
Safely and accurately regulates the flow of oil to gravity type oil burning space heaters, ranges, water heaters and furnaces. Has important fuel compensation features. Manually adjustable or easily converted to automatic operation.

• The A-P Dependable Oil Control illustrated above is one of your most vital selling advantages on any oil burning heater. First of all, it's a money-maker, for it is a practical assurance of constant heating satisfaction . . . the kind that means valuable word-of-mouth advertising for the heaters you sell.

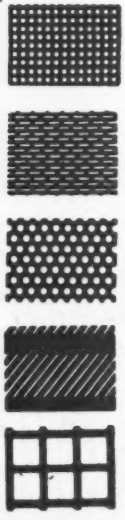
• It is well, for your own future profits, to insist that the oil burning appliances you sell come equipped with A-P DEPENDABLE Oil Control Valves.

• You'll probably want to know more about the exclusive engineering features that make A-P control-accuracy possible. Write for Bulletin 428-U.

AUTOMATIC PRODUCTS COMPANY
2452 North 32nd Street, Milwaukee 10, Wisconsin

Dependable OIL CONTROL VALVES

PERFORATED METALS ARE ESSENTIAL



They are used in the processing of grain, food, chemicals, ore, coal, rubber, petroleum and many other products.

—

Our range of sizes is great and we aim to meet the most exacting demands.

—

Write us for information.

The Harrington & King PERFORATING CO.

5649 Fillmore St., Chicago 44, Ill. and 114 Liberty St., New York, 6, N. Y.

Carolinas' Annual Conference

(*Continued from page* 90)

Report of resolution committee as follows, by chairman Ralph Barker:

"Whereas, In the discussion of roofing insulation at this conference held in Charlotte, N. C., June 14-15, 1944, it became the consensus of opinion of the Carolinas Roofing and Sheet Metal Contractors Association members that a greater effort should be made in the education of engineers, architects, and ultimate users of insulated roofs as to its proper installation. This involves a three-way responsibility of a proportionate effort by manufacturers, applicators and insulation manufacturers.

"Therefore, Be it resolved that a concerted effort be made to fully inform or educate architects, engineers and owners on the necessity of using a vaporseal composed of adequate membrane and moppings to suitably meet the conditions in the building and to protect the investment in the insulation.

"Be it further resolved that a copy of these resolutions be forwarded to the Association of the roofing and insulation manufacturers, and the U.R.C.A. with the hope that they will promptly form a plan to amplify the necessity of vaporseal for the proper protection of the complete insulated roof."

1944 Officers and Directors

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PEXTO

The SKILLED CRAFTSMAN'S *Favorite*

Sheet Metal Workers, moving to new fields, experience a feeling of confidence when they again see the PEXTO trade-mark.

Most of them, from early schooling days to their attainment of a craftsman's rating, have recognized the contribution of good tools to the making of a good workman.

Combined Shears and Punches

THE PECK, STOW & WILCOX COMPANY SOUTHINGTON, CONNECTICUT, U. S. A.

Kruckman — Plans For Lower Taxes

(*Continued from page* 45)

tax, treating losses more liberally, and making other modifications. It is more than probable that State and local securities, now exempt, may be taxed; and all labor and similar organizations more or less exempt are being vigilantly scrutinized to produce taxes in connection with any enterprises they sponsor which are competitive with commercial undertakings.

There are various schools of thought on the various reductions suggested. You hear that excess profits should be tax free on income earned after the Japanese war ends; the 40% normal and surtax might be maintained on corporation income above $25,000 if there is no other base for taxing the corporation earnings; undistributed profits tax is suggested as a substitute for the double taxation on corporation dividends; and old-age as well as other Social Security enterprises to be self-supporting must depend on still higher pay-roll taxes. When you talk to your friends in Congress you will find they think the first step should be simplification of corporation taxes, with administrative adjustments; and the second step should be adjustments and reductions after the war.

British vs. U. S. Citizens Tax

It is interesting to learn that tax ceilings both in the United States and Britain are considered at the top at about 50% of war expenditures. In Britain, this year, these wartime taxes covered about 55% of expenditures; in the U. S., 43%, and apparently they

Quiet

RANDALL PILLOW BLOCKS

Randalls operate quietly because they are engineered for air-handling work. They're self-aligning, self-lubricating. They're economical. More Randall Pillow Blocks are used on air-handling equipment than any other—assure the longest possible trouble-free service.

Write for Randall Catalog No. 42 today. Demand Randall-equipped units.

RANDALL
GRAPHITE PRODUCTS CORPORATION
DEPT. 110 607 WEST LAKE ST. CHICAGO, ILL.

If YOU were designing a stoker wouldn't it be like this?

If you were given the job of designing a stoker, based on your many years of experience in the heating business, we believe your comments would be:

NO COAL TO SHOVEL! "Nobody wants to shovel coal. I would design a hopperless stoker that would not require a special coal bin, but instead would have a dependable collector which would automatically feed the coal from the bin to the furnace. It would use fine size, low price coal, which is always available."

FEEDS COAL FROM ANY ANGLE! "To simplify the installation, I would design a universal knuckle to feed the coal from the bin to the furnace from any angle."

NO CLINKERS TO DIG! "In my design, the ash would be removed without clinkers, to a sealed container. Clinker digging is not a job a housewife can handle, and many of my customers object to stokers which require this attention."

LIFETIME RETORT! "The retort would be of some especially hard heat-resisting metal which would last as long as the stoker. It isn't fun pulling and replacing a retort every few years!"

SIMPLE GEARBOX! "A simple, sturdy worm and wheel gearbox would require only an annual inspection and filling with oil—no complex multiple gear arrangement that resembles the inside of a watch."

There is no need to go further, if that's the stoker you would design, for all these features—and more—are incorporated in the Pocahontas Stoker—the only stoker of its kind using bituminous coal. Write today for full information and illustrated catalog.

POCAHONTAS FUEL COMPANY INCORPORATED
338 EAST 131st STREET
CLEVELAND 8, OHIO

"ORIGINAL"

POCAHONTAS

THE STOKER OF TOMORROW-TODAY!

CASH IN ON THE *Customer Satisfaction*

you build when you install SWARTWOUT Roof Ventilators on Industrial and Commercial Buildings

● Styles and sizes to fill all needs. There's a profitable business for you in this important field. Write for Bulletin 214 describing the Swartwout Line.

THE SWARTWOUT COMPANY, 18511 Euclid Avenue, CLEVELAND 12, OHIO

Swartwout VENTILATION SPECIALISTS

will be 47% this fiscal year, ending June 30, 1945. In Britain, national and local taxes took 40% of the national income, while in the U. S., Federal, State, and Local taxes will take 34% of the national income. In Britain the national debt has risen to a point 122% greater than the national income, while our public debt, according to the latest Treasury statement, has reached $208,077,255,051, or more than 27% greater than our national income this year. Taxes were high in Britain when the war started. The British tax payer now pays 2.5 times as much as he paid in 1940, while the American pays 7 times as much as he paid on a $5,000 income in 1940. Incidentally, the latest statement issued by the Department of Commerce reveals that three-fourths of our national income at present consists of salaries and wages. Treasury shows that corporate taxable income this year totals $21,900,000,000, paying $13,400,000,000, leaving profits, after taxes, of $8,500,000,000.

Labor Calls Small Business Hoarder

The American Federation of Labor has widely published a statement now frequently repeated that the greatest hoarder of funds earned as war profits has been the smaller business man. The A. F. of L. charges that the bulk of accumulated savings in American banks has been placed there by the smaller plant operator, the smaller store proprietor, and by the small business unit not ordinarily regarded as the potential source of capital. The Labor union people obviously make this claim in order to give emphasis to the thought that the worker has not accumulated savings and should, therefore, not be taxed, but should be freed of taxation as quickly as possible.

Securities and Exchange Commission made a survey

A *new* name to "Artisan" readers a *great* name in the Southwest

SNO-BREZE

EVAPORATIVE COOLERS

(formerly known as "FROS-T-AIRE")

"Sno-Breze" (the name of Palmer's commercial coolers, famous throughout the Southwest) has been adopted to replace the old Fros-T-Aire brand name of Palmer's evaporative coolers for home and businesses. The Sno-Breze is a super post-war cooler; having copper distributing tube with raindrop dripper and full surface pad breathing area. Stock Sno-Breze for profits! All types available. (Consult local WPB office.) Write today for literature.

Palmer

MANUFACTURING CORP.

Phoenix, Arizona

SNO-FLUF PADS and EXCELSIOR • QUIET-ZONE BLOWERS

WILL WILLIE WILLIAM BILL

4 Little "Fitting" Guys Fighting For You!

Will cuts installation costs—Willie makes fittings fit—William keeps prices down to bed rock—and Bill sees that there is stock near you.

FLASH NEWS! Complete, simplified line Gravity Pipe and Fittings now available on rated orders—24 hour service and shipments.

FREE: Complete, easily understood gravity pipe and fittings catalog showing full simplified line. Write Dept. 2 for prices and catalog.

THE WILLIAMSON HEATER COMPANY
CINCINNATI 2, OHIO

WILLIAMSON
WARM AIR FURNACES

Easy Extra Sales, because--

Your Customer must Save Fuel

10% to 25% Fuel Saving. Easily, quickly installed. Fully Automatic. No Servicing.

Cole DRAFT Governor

Standard domestic round style—Sizes 5" to 18"

Any season, Cole Draft Governors will earn you a tidy profit in easily-made *extra* sales. *This* season—in the face of fuel rationing—Cole Draft Governors will earn you the lasting satisfaction of customers that follows increased comfort, heating efficiency and *fuel economy.*

The time to sell Cole Draft Governors is RIGHT NOW. You'll find a large waiting market in your community, as more than 75% of the oil-burning installations *need* this control.

CSE

A complete line of draft controls for every size and type of heating and power plant—from the smallest domestic to the largest industrial installation.

Write for Complete Information

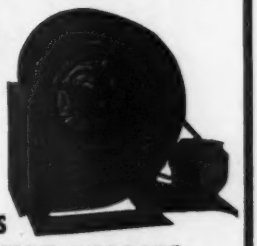
COLE SULLIVAN ENGINEERING CO.

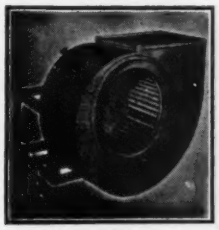
1318 No. Third St., Minneapolis, Minn.

YOUR BLOWER Requirements

AVAILABLE AT

Schwitzer-Cummins Company





★ BLOWERS FOR EVERY PURPOSE

Double Inlet and Single Inlet

HY-DUTY Blowers, 9¾" to 25" • Top and Bottom Horizontal, and Top and Bottom Vertical Discharge • Top and Bottom Motor Mounting • Dual Units also available.

★ CENTER DISC WHEEL—Double Inlet, Double Width • Reinforced Center Disc • Designed for Modern Air Conditioning and Heating Applications • Sizes, 4½" to 50".

★ ENGINEERING DATA—Write for Catalogues showing complete Performance Data • Experienced Engineering Department available to help solve your Air Handling Problems.

BLOWER DIVISION

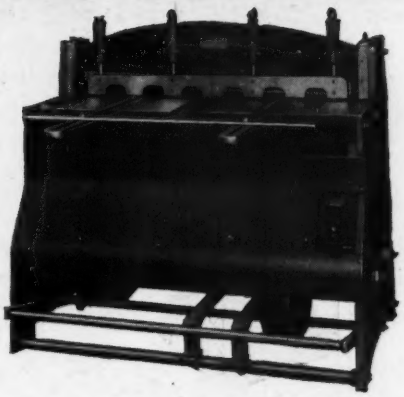
SCHWITZER-CUMMINS COMPANY

1145 EAST 22ND STREET INDIANAPOLIS, U. S. A.

WHITNEY-JENSEN PRODUCTS

30 YEARS EXPERIENCE

POWER SQUARING SHEARS



Fast-action, small, powerful squaring shears featuring a high speed and a new blade adjustment that is simple, positive, and accurate. Machine illustrated has adjustable front and back gauges, and back-geared power drive.

42 in., 14 ga.

Also made in 42-in size, 16 ga. capacity; and in 36-in size, 16 ga. capacity. Write for detailed descriptive circular.

No. 17 BENCH PUNCH

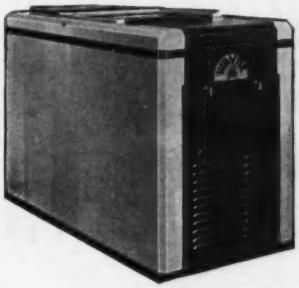
Sturdy, reliable bench tool with powerful eccentric-lever action and roller bearings. Operator works in front. Work table 6"x8" has tapped holes for stops and guides. Capacity ⅜" hole through ¼" commercial iron. Three punches and dies furnished with each tool.

Write for our new **PUNCH and DIE CATALOG**

WHITNEY METAL TOOL COMPANY

91 FORBES ST. • ROCKFORD ILL.

WAYNE OIL-FIRED



FURNACE UNITS

60,000 to 400,000 B.T.U.

PROMPT SHIPMENT

on proper priority

The complete line of Wayne oil-burning furnaces and burners is again available.

WAYNE OIL BURNER CO., 917 Glasgow Avenue
Fort Wayne 4, Indiana

WAYNE'S V-DAY LINE WILL BE COMPLETE

OIL-FIRED, GAS-FIRED, COAL-FIRED FURNACES, STOKERS, BOILERS, WATER HEATERS. CONVERSION BURNERS FOR OIL AND GAS.

LINE UP WITH WAYNE FOR POST WAR PROFITS

NORTHWESTERN
for
Repair Parts

YOU just simply can't wait to take care of those furnace repair jobs. Manpower shortages demand that you get after them at once and have all heating systems in your community in perfect operating condition before the new season. Start now *—and do a better job with Northwestern Repair Parts.*

Northwestern Stove Repair Co.
662 W. Roosevelt Road CHICAGO

of 450,000 corporations, large and small, and published the conclusion that corporations have accumulated enough reserves to reconvert to peacetime production and were able to initiate a great expansion program without drawing on outside capital. To settle the confusion created by the several statements and claims, the U. S. Chamber of Commerce has suggested the SEC should break down its survey in order that it may be clear in what brackets and in what types of business these conditions obtain.

The debate on the double tax on corporation dividends is one of the most troublesome subjects. As this Letter is being brought to a close a new suggestion comes from the tax experts. They think it might be practical to impose a withholding tax on corporate income. When the dividend is paid the stockholder

• BARBER
Gas Pressure REGULATORS
for Reliability!

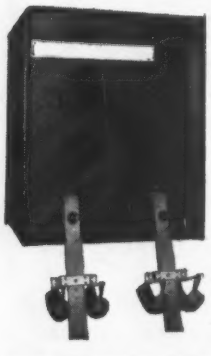
Certified by A. G. A. Testing Laboratory. Write for Catalog and prices on Barber Conversion Burners, Appliance Burners, and Regulators.

THE BARBER GAS BURNER CO.
3702-4 Superior Avenue
CLEVELAND OHIO Sizes 1/4" up

Simplex Automatic Draft Controls
For Greatest Fuel Economy

NEW RUST PROOF
5 in 1
"SIM-TROL"

The SIM-TROL control with Simplex adjustable sleeve is adjustable to breechings (or smoke flues) from 8" to 12" inclusive, which covers the range of most domestic heating plants. Will save up to 25% in fuel; maintains draft at 1/100 of an inch of the desired point under all conditions.



Type "A" Industrial Control

References, as to efficient operation and economies effected by Simplex Controls on plants of various sizes up to 1,800 H.P. can be furnished. In many cases savings of over 25% have been made.

Most complete line of Barometric Controls for every size heating plant. Write for full descriptive circulars.

SIMPLEX
MANUFACTURING COMPANY
FOND DU LAC, WISCONSIN

You can **UP** production ...even with unskilled labor

MODEL 1236
36-in. Throat
12-Gauge Capacity

CIRCLE CUTTING ATTACHMENT included as Standard Equipment with this machine

Libert Hi-Speed SHEAR

From almost any material—steel, stainless steel, brass, aluminum, metal screen, fiber, paper products—even an unskilled worker soon learns to cut intricate combinations of circles, angles, and curves, *rapidly, accurately, cleanly.* A *Libert* Shear does *not* nibble. Edges are smooth, need no finishing. Inside cuts are no harder than outside, whether it's flat sheets or formed work. No starting holes are necessary. *Write for Bulletin.*

Made in sizes up to 60-in. throat, 10-gauge capacity

LIBERT MACHINE COMPANY
Green Bay, Wisconsin

UNCLE SAM PICKS YOUR PROSPECTS FOR *Today's Stoker Sales*

There's a big opportunity for Gehl Stoker dealers RIGHT NOW. Your Government encourages stoker installations in office buildings, hospitals, schools, churches, hotels. Most users of 25 or more tons of coal per season, are eligible to buy. They can save money, coal, time, and help the war effort by installing . . .

GEHL STOKERS

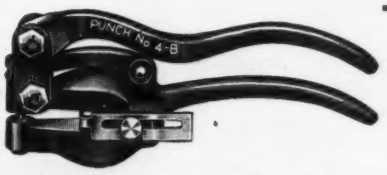
Dealers who line up now will be ready for the big postwar demand in domestic, commercial and industrial stokers. Write today for literature and dealer plan.

The performance records of Gehl Stokers over a period of years is outstanding. Gehl engineering backed by 76 years' experience has pioneered many noteworthy features, such as rust-resisting, all-cast chassis; Air Governor, fuel-saving automatic control of chimney draft, and other advantages that make sales and satisfied users.

GEHL BROS. MFG. CO.
Established 1867. Dept. BG-802, West Bend, Wisconsin

A GEHL WINS FRIENDS WHEREVER IT GOES

WHITNEY
LEVER PUNCHES



NUMBER FOUR "B" PUNCH

This punch for sheet metal work has a capacity of ¼" through 16 gauge. Weight 3 lbs. Length 8½". Depth of throat 2". Complete tool includes three punches and three dies of specified sizes with die adjusting key. A time-saver for your up-to-date shop.

And here's another handy tool for the modern shop — the No. 2 Punch. Length 23". Capacity 5/16" through ¼" iron, weight 12 lbs., depth of throat 1-11/16". Punches and dies 3/32" to ½" by 1/64".

NUMBER TWO PUNCH

W. A. WHITNEY MFG. CO.
636 RACE ST ROCKFORD ILL

SHEET METAL MEN should know more about this machine

KALAMAZOO Metal Cutting Band Saw

SAVES EVERY DAY in your SHOP

Why let high priced labor cut by hand—lengths of angle iron—rods—tubes—bars, etc.—when this low priced machine does these jobs with amazing Speed and Accuracy? Pays for itself in Labor Saving and Steps up Production. Scores of shops say "just what we've always wanted."

Write for bulletin.

MACHINE TOOL DIVISION
Kalamazoo Tank & Silo Co. — Kalamazoo, Michigan

PENN-AIRE FURNACES
GRAVITY, CAST IRON

Popular Price
Practical Design
Economical Operation

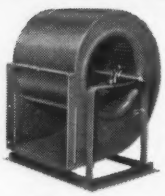
UNION MANUFACTURING CO., INC.
BOYERTOWN, PA.

would report it, but take proportionate part of the corporate tax as a credit against his own tax liability. Another suggestion is that all capital losses might be allowed in full, and included in carry-overs and carry-backs. And that war-caused expenses payable after the war should offset war income, the wartime tax rates being higher. It also is suggested there be special tax credits or deductions for increased employment or production after the war. And special temporary tax exemptions to small, recent, businesses. Special tax benefits also are proposed for new equity capital, of special benefit for small businesses. Still another popular idea here is to tax small corporations with income less than $50,000 as if they were partnerships, and to combine normal and surtax rates into one schedule. Also to allow deduction of dividends paid to the extent of 3% of the corporation's capital.

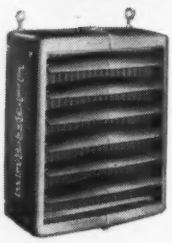
Carry-backs are the particular storm center now.

"Use CLARAGE PRODUCTS and Repeat Business Comes Easy!"

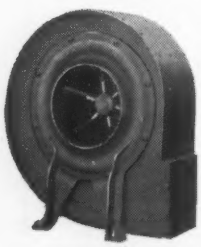
This nationally known, nationally accepted fan equipment helps you land desirable jobs—helps you KEEP desirable customers. It will pay to figure with us on any air handling or conditioning project. ***Write for Clarage catalog.***



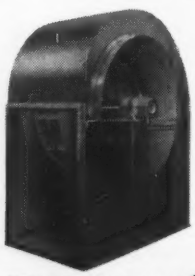
FURNACE FANS



UNIT HEATERS



EXHAUST FANS



VENTILATING FANS

COMPLETE AIR CONDITIONING • COOLING • VENTILATION • FACTORY HEATING • MECHANICAL DRAFT • FANS and BLOWERS for INDUSTRIAL NEEDS

Clarage Fan Company Kalamazoo, Mich.

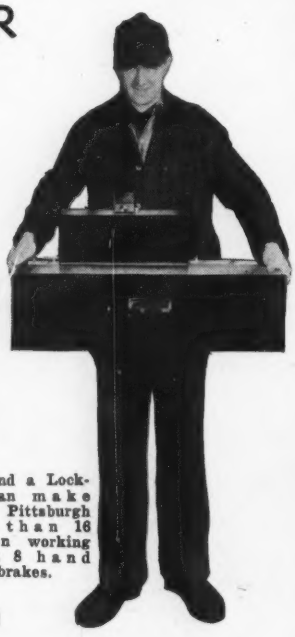
APPLICATION ENGINEERING OFFICES IN ALL PRINCIPAL CITIES

FURNACE REPAIR PARTS
For All Makes Now Available

With priorities restricting sales of new equipment, repair business is more essential than ever. Furnace dealers can still depend upon prompt deliveries of repair parts for ALL MAKES AND AGES of furnaces. Get the repair business now and you'll be all set to get the new jobs after the war. Send in your orders now, while stock is available for immediate delivery.

PEERLESS FOUNDRY CO.
1855 LUDLOW AVENUE **INDIANAPOLIS, IND.**
Pioneers in Warm Air Heating Equipment for over a third of a century.

HERE'S YOUR ANSWER, MISTER!



A portable member of the Lockformer family—for speedy dependable jobs today and competitive work in the post war era.

One man and a Lockformer can make more Pittsburgh locks than 16 men working at 8 hand brakes.

Write for literature about the complete Lockformer line.

The LOCKFORMER Co.

4615 Arthington Street **Chicago 44, Illinois**

ATH-A-NOR
Furnace Repair Parts

The furnace choice of dealers who know performance and saleability has been Ath-A-Nor for more than 50 years. Quality, economy and efficiency have always distinguished the Ath-A-Nor line. Replace with Ath-A-Nor to insure maximum performance and fuel economy! And continue to pile up scrap for munitions and see that it reaches government agencies speedily!

MAY-FIEBEGER COMPANY
MANUFACTURERS OF QUALITY HEATING EQUIPMENT FOR OVER 50 YEARS
NEWARK, OHIO

PLANING MILL EXHAUSTERS

DIAGRAM shows how special streamlined inlet deflects airstream so as to reduce turbulence and back plate erosion. Result: higher over-all efficiency, lower maintenance cost, less time out for service and repairs.

SEND FOR DETAILS *including performance and dimensions in Catalog 410.*

B. F. STURTEVANT COMPANY
HYDE PARK · BOSTON 36, MASS.

WISS "METAL MASTER"

Compound Action
AVIATION SNIPS

CUTS LEFT

Used extensively by leading aviation and metal working industries and in U. S. Government Plants throughout the country.

- Cuts circles, squares and irregular patterns on Stainless, Dural, and Monel Metals with ease.
- All Parts interchangeable.
- M1 for cutting left—M2 for cutting right.

WISS BULLDOG AND STANDARD PATTERN SNIPS are used in Shipyards, on Government construction projects, and on maintenance work wherever sheet metal is required.

Send for literature of complete line

J. WISS & SONS CO.
ESTABLISHED 1848 NEWARK, N. J.

MASTER TEMPERATURE CONTROLS

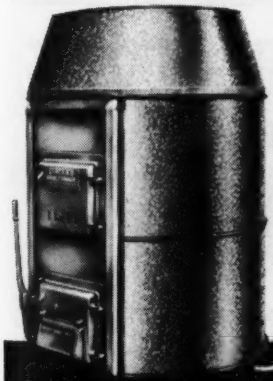
I.C.I.

Our engineers, mechanics and management brought to our war jobs the successful experience of more than a quarter of a century in the making of precision temperature controls.

In meeting the exacting requirements of war work, we have developed even greater skill, which will be carried over into civilian production in the future. Alert for new achievements, we have worked out improvements in our products and devised interesting new things for postwar use. The "Master" mark on future temperature controls, that you may use or sell, will mean greater comfort and longer service.

WHITE MANUFACTURING CO.
2368 University Ave. St. Paul, Minn.

FOR BETTER HEATING . . .



Certified
TYPE R-G
GRAVITY
STEEL
FURNACE

Stainless Steel Products Company
1000 BERRY AVENUE
WRITE FOR INFORMATION SAINT PAUL MINNESOTA

ALLEN

. . . Has The RIGHT
SODERING FLUX
For Every Sheet-Metal Job!
Let Us Help You With Your Problems

L. B. ALLEN CO., Inc.
6702 Bryn Mawr Ave., Chicago, 31, Ill.

40 Years of Experience in Building

Handled exclusively through established dealers

An Ideal *FIRST* for Dealers with whom *LASTing* quality is important *ALWAYS*, on every job!

***Majestic* FURNACES**
For Better Heating!

The Majestic Co., 909 Erie St., Huntington, Ind.

REPAIRS FOR ANY FURNACE BOILER OR STOVE

REPAIR PARTS
FOR ANY
FURNACE, BOILER
OR STOVE

Complete Line of Sundries and Supplies

FOR QUICK SHIPMENT

OMAHA STOVE REPAIR WORKS
1206-8 DOUGLAS ST., OMAHA 2, NEB.
SINCE 1882

Bremil

PORTABLE SHEARS

Your work will proceed faster and neater when you use Bremil Portable Shears on the job or in the shop. Write today for literature showing complete line.

ALL-ALLOY No. 2 cuts up to ¼" steel plate.
ALL-ALLOY No. 1 cuts up to No. 11 gauge strip or sheet.
Special blades may be obtained for shearing stainless steel.

BREMIL MFG. CO., ERIE, PA.

CHENEY METAL

The Modern **SHEET METAL**

- SUPERIOR TO GALVANIZED IRON
- WEATHER PROOF
- FIRE RETARDANT
- MOISTURE PROOF
- FORMS EASILY WITH REGULAR SHOP TOOLS

CHENEY METAL PRODUCTS CO. TRENTON, N.J.

WRITE FOR DESCRIPTIVE FOLDER AND THE NAME OF YOUR NEAREST DISTRIBUTOR

DASCO

Forged
HAND TOOLS

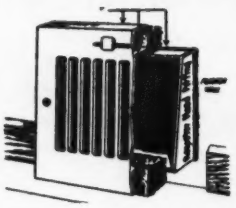
Chisels, punches, drills, nippers and numerous other hand tools . . . quality built for long service. Sold by leading jobbers.

DAMASCUS STEEL PRODUCTS CORP., ROCKFORD, ILL.

Small business people with low excess profits credits, and limited working capital, discount any benefit. The chances are, however, that the carry-back will be retained.

How much more will the war cost? Of course no one really knows. Here is an estimate that is not less reliable than others. In 1944, just ended, it cost just less than $100,000,000,000. During the year which will end June 30, 1945, it is estimated it will cost approximately $80,000,000,000; during 1946 it is estimated the cost will be $65,000,000,000; and the following year, 1947, about $40,000,000,000. They all calculate that 1948 will be a "normal" year, with $20,000,000,000 to $25,000,000,000 over-all expenditure. The pre-war budget was $8,000,000,000 or $9,000,000,000.

You Can Guarantee Streakless Registers



Make FRIENDS of YOUR CUSTOMERS

Get jobs at a better price against competition.

Simplify and expedite installing Register Heads at less cost, as STREEKNO takes care of any air leaks. STREEKNOTIZING is an uplift for the entire industry, you make a nice profit and eliminate an expensive nuisance for your customer at the same time. Also ties in with every cleaning job. Installed price only $2.00 per register, 5 to 10 minutes installation time per register.

Live Dealers—Write for literature and details of our profit making plan, or better order one or a few cases from YOUR Jobber today as a starter. Sales literature etc., in every shipping case of 12 register packings at $6.60.

A PRODUCT OF

EXCEL HEATING and AIR CONDITIONING CO.
3715-19 Belmont Ave. Chicago 18, Ill.

CHICAGO STEEL BRAKE

BEST BY FORTY-TWO YEARS TEST

DREIS & KRUMP MFG. CO.
7404 LOOMIS BLVD. CHICAGO 36

REPAIR PARTS

for
STOVES—FURNACES—
BOILERS
Also
MODERNAIRE FURNACES
Fittings, Registers, Supplies

DES MOINES STOVE REPAIR CO. 75 YEARS OF SERVICE 1869 1944

DES MOINES STOVE REPAIR CO.

Sam C. Green
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DES MOINES, IOWA
Since 1869

-BB-
HOOKS AND HANGERS

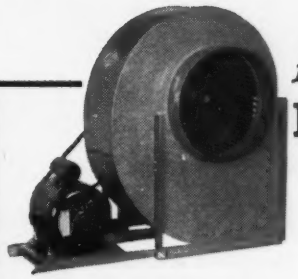
THRU LEADING JOBBERS EVERYWHERE

BERGER BROTHERS CO.

Main Office & Factory

229-237 Arch St., Philadelphia, Pa.

★ ★



Do You Want this Well-Rounded **BLOWER** *Line?*

• The Properaire Line gives you prompt delivery on all types of blowers for any air-moving task. They're easily adapted to your installation problems. Priced right.

Model B—Assembly Sizes 6" to 16" and Package Units

Inquire of your Jobber or write direct to factory for your copy of latest literature. Bulletin 1202.

Grand Rapids Die & Tool Co.

1202 Godfrey Avenue, S. W. Grand Rapids 2, Mich.

Cut Sheet Metal "Easy as Pie"

with Black & Decker Lectro-Shears

Lectro-Shears cut straight lines, irregular patterns or curves down to ¾" radius. Cutting operation always visible. Two models, 18 and 16 gauge, cut up to rated capacity in steel, 50% more in non-ferrous metal. Universal motors. See your Black & Decker Distributor, or write to: The Black & Decker Mfg. Co., 782 Pennsylvania Ave., Towson 4, Maryland.

16-gauge . . . $76

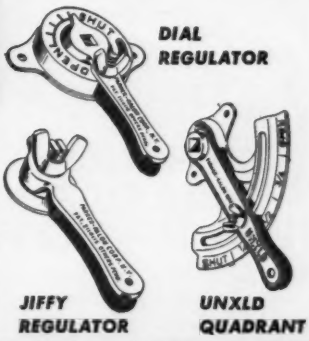
18-gauge Model . . . $60

Black & Decker

Portable Electric **TOOLS**

DRILLS, HOLE SAWS, DRILL STANDS, LECTRO-SHEARS, BENCH GRINDERS, SANDERS, PORTABLE GRINDERS.

A Type And Size For Every Need



For efficiently controlling light and medium dampers in heating, ventilating and air conditioning systems, specify Parker-Kalon Damper Controls. The line includes all types and sizes, at a range of prices to fit the needs of any job. Parker-Kalon Corp., 190-192 Varick Street, New York.

PARKER-KALON damper controls

SKYLINE VENTILATORS

ÆOLUS, AIRATE, AIRIDGE, NUVENTS, RAINTITE AND IMPROVED DESIGNS

All sizes and materials

ÆOLUS DICKINSON

3332 S. Artesian Ave. Chicago 8

"GOOD WILL" REPAIR PARTS

Large and Complete Line—For All Makes of

FURNACES, STOVES AND BOILERS

Orders Filled Promptly

THE F. A. KLAINE CO.

(Established 1849)

401 West Front Street Cincinnati 2, Ohio

For Balanced Atmosphere

THERMO-DRIP HEAT-CONTROLLED HUMIDIFIERS

AUTOMATIC HUMIDIFIER CO. Cedar Falls, Iowa

Elgo Ventilating Specialties

An Automatic Shutter That Doesn't Rattle

Here's an automatic shutter with a patented spring mechanism which holds the louvres firmly in place so that there is never any rattling from drafts or breezes. The louvres open only when the fan is in operation, and snap tight shut the instant the fan is shut off.

Write for catalog and prices!

"ELGO" TYPE AUTOMATIC SHUTTER Rear View (Closed)

Free CATALOG

ELGO SHUTTER & MANUFACTURING CO.

6966 W. Jefferson Detroit 17, Mich.

ECON-O-COL
the "Stronghearted"
STOKER

ECON-O-COL Automatic COAL BURNER

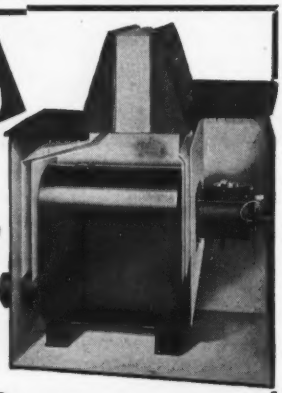
ECON-O-COL STOKER DIVISION
COTTA TRANSMISSION CORP.
ROCKFORD ILLINOIS

THE SHIELD OF QUALITY

Remember COLE HOT BLAST

LINE OF OIL & GAS-FIRED FLOOR FURNACES

Will again be on the market as soon as its over—meanwhile we're in war work.



COLE HOT BLAST MFG. CO.
3108 W. 51st St. Chicago 32, Ill.

Our popular oil-fired Floor Furnace

Write for Catalog and Prices

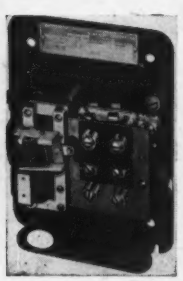
SPEED UP ORDERS with a
BEVERLY SHEAR

Throatless shears that cut any shape . . . straight, circular or irregular. FASTER—Precision—accuracy! Order No. 1 for 14 gauge. No. 2 for 10 gauge. No. 3 for 3/16 inch mild steel and 10 gauge stainless.

BEVERLY SHEAR MFG. CO.
3004 West 111th St.,
CHICAGO (43), ILL.

MERCOID NOISELESS RELAYS
Are Mercury Switch Types — Exclusive in Design and Operation

THE QUIET OPERATION OF THE MERCOID TRANSFORMER-RELAY MAKES IT IDEAL FOR ALL OIL BURNER AND STOKER RELAY REQUIREMENTS



THE MERCOID CORPORATION
4201 BELMONT AVENUE.
CHICAGO, ILL., U.S.A.

☆ WAR TIME

Air Control Products, Inc., Coopersville, Michigan, is building a new office and research building to be ready about July —thus increasing their plant capacity.—Robert L. Leigh, President.

◆

U. S. Air Conditioning Corporation, Minneapolis, reports their Army, Navy and Maritime contract for fans and blowers equal seventy per cent of their entire production. Another fifteen per cent of their production is sub-contracts for war.

◆

Wodack Electric Tool Corporation, 4627 West Huron Street, Chicago, has been awarded the Army Ordnance Flag. Two United States Army Officers, representing the Chicago Ordnance District, made the presentation on May 25.—**Oscar P. Wodack,** President.

◆

The Fingles Co., Reistertown Road at Elgin Avenue, Baltimore, Maryland, now operating a wartime plant, reports to its peacetime customers through an advertisement (7¾ by 10¾ inches) in their daily newspaper, and offers the services of their Engineering department in assisting with sheet metal requirements after the war.

Instead of metal duct systems, supply and exhaust ventilation for ships is now manufactured.

Instead of heavy sheet metal work, water tight ship doors are now made.

Tabulations show fifteen items being made in war; with an equal number of peacetime services offered.

◆

The Armstrong Company, Detroit, reports from ten to twenty per cent of their present business consists of war orders.

Alexander Armstrong, Vice President, is a lieutenant (Senior Grade), U. S. Navy, secretary to Commandant U. S. Naval Air Station, Clinton, Oklahoma. Lt. Armstrong was twice in action, when on duty in the Pacific on the U. S. Cruiser Chicago. The second time, when the Chicago was sunk by the enemy, he was in the sea for a short time, but was picked up and taken to New Caledonia. Subsequently, he served on Russell Island, near Guadalcanal. After a few months for convalescence following an illness, he is again on active duty.

Others serving from Armstrong are:

Murray G. Belden, former salesman—Instructor, Officers Training School, Carlisle, Pa.

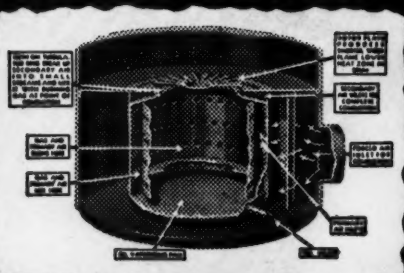
Herman W. Somershoe, former salesman—Private, Camp Bowie, Texas.

Famous Patented *Monogram* Vaporizing
Provides Highest Known Operating Efficiency wit

Full Forced Winter Air Conditioners

◆

Booster Gravity Units



The QUINCY STOVE MFG. COMPANY, Quincy, Ill

TRADE NEWS ☆

G. W. Adams, Adams Sheet Metal Works, Benton Harbor, Michigan, has been in the U. S. Navy (Seabees) since April 30, 1942.

◆

E. K. Campbell of E. K. Campbell Heating Co., Kansas City, Mo., reports about ten per cent of their present business consists of war orders.

Mr. Campbell has lost a nephew in the service of our country.

◆

Payne Furnace & Supply Co., Inc., Beverly Hills, California, in peacetime one of America's large manufacturers of heating equipment, has won, for the second time, the Army-Navy Award for meritorious services on the production front and the right to add the "White Star" to its "E" flag, according to notification received from Under Secretary of War Patterson by E. L. Payne, president of the Company.

◆

Mayflower Air-Conditioners, Inc., St. Paul, reports facilities completely devoted to the operation of a machine shop on high precision ordnance work for the armed forces.

The company has formulated plans for the resumption of the manufacture of Mayflower warm air furnaces as quickly as conditions permit, and anticipates that Mayflower equipment will again be available within ninety days of the cessation of the emergency.

◆

Employees and officials of Penn Electric Switch Co., Goshen, Indiana, were again honored by the Army-Navy Production Board by the renewal of their Army-Navy "E" Award. This award gives the company a second white service star affixed to the "E" flag and signifies continued excellence in the production of war material.

A large part of Penn's production output is the manufacture of complete electrical control circuits for naval guns. These units include the necessary switches, solenoids, transformers, lights, firing triggers, etc., necessary to the operation and firing of the 3 in. and 5 in. guns used by naval vessels as well as cargo ships. Penn also manufactures special solenoids for firing aircraft guns mounted on Navy fighter planes. The company builds periscopes used in Army tanks to enable tank personnel to see out of the tank without being subjected to direct gunfire through openings in the armor.

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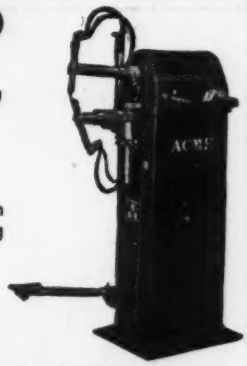
WITH AN
ACME "Hot Spot" WELDER



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FURNACES
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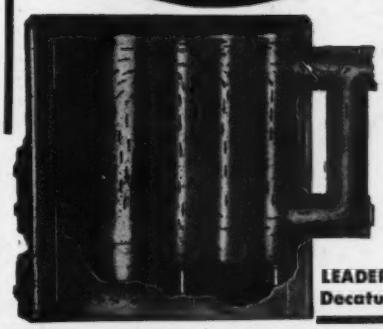

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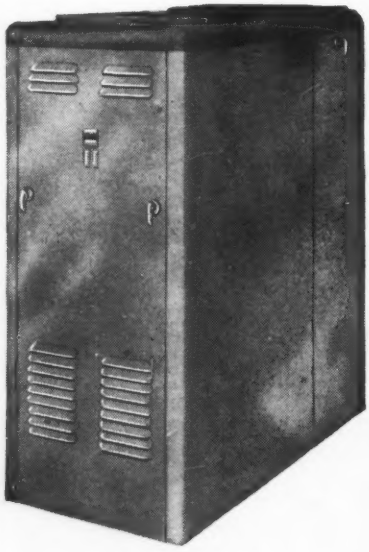

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Complete with Gun Burner

Resale Price
$328.00
Less 40% Dealers' Discount
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Capacity at Bonnet—100,000 B.T.U.

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- Blower by Climax Mchy. Co.
- Furnace by Borg Warner
- Controls by Mercoid

Complete Furnace and cabinet assembled on one piece Steel base—shipped as package unit with combustion chamber, blower and humidifier in place. Shipping Weight—about 650 pounds.

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"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Write us about your problems. Send for Bulletin No. EX-41

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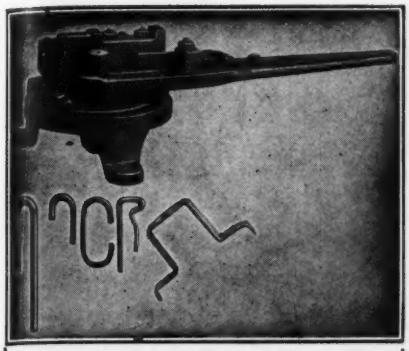

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Angle & U, Eye and Pipe
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WANTED SURPLUS EQUIPMENT—Fans, Blowers, Motors, Cooling Coils, Heating Coils, Unit Heaters, etc. Send list of items available and state cash price and whether priority is required. Air Conditioning Engineering Co., 90 Memorial Drive, Cambridge 42, Mass.

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SOUND METER
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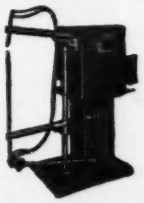
For Sale—30" Squaring Shear, slightly used, $30.00. 20" tin folder in good condition, $15.00. George J. Bushman, 63 S. LaSalle Street, Aurora, Illinois.

WELDING HEADQUARTERS



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BOX & PAN: Length 7 Ft., 14 ga. cap.
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30" & 20" PEXTO and NIAGARA POWER; 42" LEFFLER; 60" NIA. PIPE.
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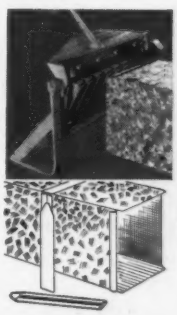

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½ lb., 1 lb., 5 lb. cans; 2 oz., 6 oz., 12 oz.
ALEX. R. BENSON CO., INC., HUDSON, N. Y.

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PRODUCERS OF STEEL SHEETS, MANUFACTURER'S WIRE AND CHAIN LINK FENCE

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Clean air filters improve efficiency, cut operating costs . . . and offer you another way to add to your profits.

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When dirty, chocked-up filters cause air conditioners to "breathe hard", play the doctor. You can quickly change RESEARCH AIR FILTERS, so that the unit works easily.

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